Appendix H Detailed Cost Estimate Worksheets

Table 7-4 Cost Summary for Remedial Alternatives - Little Lake Butte des Morts 125 ppb

Alternative	Dredge Volume (cy)	TSCA Dredge Vol. (cy)	Hydraulic Dredging	Mechanical Dredging	Capping	Dewatering	Water Treatment	Thermal Treatment	CDF Construction	Off-site Disposal	Institutional Controls	Subtotal	20% Contingency	TOTAL
Α	(0			-						\$4,500,000	\$4,500,000	\$900,000	\$5,400,000
В	(0									\$9,900,000	\$9,900,000	\$1,980,000	\$11,880,000
C1	1,689,173	16,165	\$37,700,000			\$3,200,000	\$1,900,000			\$184,200,000	\$4,500,000	\$231,500,000	\$46,300,000	\$277,800,000
C2	1,689,173	16,165	\$37,700,000			\$36,200,000	\$2,100,000			\$45,700,000	\$4,500,000	\$126,200,000	\$25,240,000	\$151,440,000
D	1,689,173	16,165	\$36,700,000	\$1,700,000			\$2,100,000		\$69,300,000	\$1,700,000	\$4,500,000	\$116,000,000	\$23,200,000	\$139,200,000
E	1,689,173	16,165	\$37,700,000			\$3,200,000	\$1,900,000	\$69,900,000			\$4,500,000	\$117,200,000	\$23,440,000	\$140,640,000
F	1,253,873	16,165	\$32,300,000	\$1,700,000	\$33,600,000		\$1,800,000		\$69,300,000	\$2,000,000	\$4,500,000	\$145,200,000	\$29,040,000	\$174,240,000

250 ppb

Too bbo														
Alternative	Dredge Volume (cy)	TSCA Dredge Vol. (cy)	Hydraulic Dredging	Mechanical Dredging	Capping	Dewatering	Water Treatment	Thermal Treatment	CDF Construction	Off-site Disposal	Institutional Controls	Subtotal	20% Contingency	TOTAL
Α	0	0									\$4,500,000	\$4,500,000	\$900,000	\$5,400,000
В	0	0									\$9,900,000	\$9,900,000	\$1,980,000	\$11,880,000
C1	1,322,818	16,165	\$32,000,000			\$3,200,000	\$1,600,000			\$144,300,000	\$4,500,000	\$185,600,000	\$37,120,000	\$222,720,000
C2	1,322,818	16,165	\$32,000,000			\$28,400,000	\$1,800,000			\$35,800,000	\$4,500,000	\$102,500,000	\$20,500,000	\$123,000,000
D	1,322,818	16,165	\$31,000,000	\$1,700,000			\$1,800,000		\$69,300,000	\$2,000,000	\$4,500,000	\$110,300,000	\$22,060,000	\$132,360,000
E	1,322,818	16,165	\$32,000,000			\$3,200,000	\$1,600,000	\$54,700,000			\$4,500,000	\$96,000,000	\$19,200,000	\$115,200,000
F	999,117	16,165	\$27,900,000	\$1,700,000	\$31,600,000		\$1,600,000		\$69,300,000	\$2,000,000	\$4,500,000	\$138,600,000	\$27,720,000	\$166,320,000

500 ppb

Alternative	Dredge Volume (cy)	TSCA Dredge Vol. (cy)	Hydraulic Dredging	Mechanical Dredging	Capping	Dewatering	Water Treatment	Thermal Treatment	CDF Construction	Off-site Disposal	Institutional Controls	Subtotal	20% Contingency	TOTAL
Α	0	0									\$4,500,000	\$4,500,000	\$900,000	\$5,400,000
В	0	0									\$9,900,000	\$9,900,000	\$1,980,000	\$11,880,000
C1	1,023,621	16,165	\$27,000,000			\$3,200,000	\$1,400,000			\$111,700,000	\$4,500,000	\$147,800,000	\$29,560,000	\$177,360,000
C2	1,023,621	16,165	\$27,000,000			\$22,000,000	\$1,600,000			\$27,700,000	\$4,500,000	\$82,800,000	\$16,560,000	\$99,360,000
D	1,023,621	16,165	\$26,000,000	\$1,700,000			\$1,600,000		\$69,300,000	\$2,000,000	\$4,500,000	\$105,100,000	\$21,020,000	\$126,120,000
E	1,023,621	16,165	\$27,000,000			\$3,200,000	\$1,400,000	\$42,400,000			\$4,500,000	\$78,500,000	\$15,700,000	\$94,200,000
F	771,564	16,165	\$23,700,000	\$1,700,000	\$28,700,000		\$1,400,000		\$37,300,000	\$2,000,000	\$4,500,000	\$99,300,000	\$19,860,000	\$119,160,000

1000 ppb

	T													
Alternative	Dredge Volume (cy)	TSCA Dredge Vol. (cy)	Hydraulic Dredging	Mechanical Dredging	Capping	Dewatering	Water Treatment	Thermal Treatment	CDF Construction	Off-site Disposal	Institutional Controls	Subtotal	20% Contingency	TOTAL
Α	0	0									\$4,500,000	\$4,500,000	\$900,000	\$5,400,000
В	0	0									\$9,900,000	\$9,900,000	\$1,980,000	\$11,880,000
C1	784,192	16,165	\$22,100,000			\$3,200,000	\$1,300,000			\$85,600,000	\$4,500,000	\$116,700,000	\$23,340,000	\$140,040,000
C2	784,192	16,165	\$22,100,000			\$16,900,000	\$1,400,000			\$21,300,000	\$4,500,000	\$66,200,000	\$13,240,000	\$79,440,000
D	784,192	16,165	\$21,100,000	\$1,700,000			\$1,400,000		\$37,300,000	\$2,000,000	\$4,500,000	\$68,000,000	\$13,600,000	\$81,600,000
E	784,192	16,165	\$22,100,000			\$3,200,000	\$1,300,000	\$32,500,000			\$4,500,000	\$63,600,000	\$12,720,000	\$76,320,000
F	635,547	16,165	\$20,100,000	\$1,700,000	\$23,600,000		\$1,300,000		\$37,300,000	\$2,000,000	\$4,500,000	\$90,500,000	\$18,100,000	\$108,600,000

5000 ppb

Alternative	Dredge	TSCA Dredge	Hydraulic	Mechanical	Capping	Dewatering	Water	Thermal	CDF	Off-site Disposal	Institutional	Subtotal	20% Contingency	TOTAL
7.1.10111141170	Volume (cy)	Vol. (cy)	Dredging	Dredging	-uppg	2 o mator mig	Treatment	Treatment	Construction	on one Diopecui	Controls	- Cabiotai	20 /0 Containgoney	
Α	0	0									\$4,500,000	\$4,500,000	\$900,000	\$5,400,000
В	0	0									\$9,900,000	\$9,900,000	\$1,980,000	\$11,880,000
C1	281,689	16,165	\$8,900,000			\$3,200,000	\$1,000,000			\$30,900,000	\$4,500,000	\$48,500,000	\$9,700,000	\$58,200,000
C2	281,689	16,165	\$8,900,000			\$6,100,000	\$1,100,000			\$7,700,000	\$4,500,000	\$28,300,000	\$5,660,000	\$33,960,000
D	281,689	16,165	\$7,900,000	\$1,700,000			\$1,100,000		\$37,300,000	\$2,000,000	\$4,500,000	\$54,500,000	\$10,900,000	\$65,400,000
E	281,689	16,165	\$8,900,000			\$3,200,000	\$1,000,000	\$11,700,000			\$4,500,000	\$29,300,000	\$5,860,000	\$35,160,000
F	222,635	16,165	\$8,000,000	\$1,700,000	\$11,700,000		\$1,000,000		\$37,300,000	\$2,000,000	\$4,500,000	\$66,200,000	\$13,240,000	\$79,440,000

BASIS FOR PRELIMINARY COST ESTIMATES

SEDIMENT REMEDIATION

FOX RIVER, WISCONSIN LITTLE LAKE BUTTE DES MORTS

Action Level - 125 ppb

M-4						
Material Handling Assumptions: Volume > 125 ppb	1,689,173	OV.	761 ac	1,289,445	m2	A cres corresponds to dradge
Volume > 250 ppb	1,322,818		761 ac	1,289,443		Acres corresponds to dredge
						footprint area
Volume > 500 ppb	1,023,582			781,360		
Volume > 1,000 ppb	784,192			598,620		
Volume > 5,000 ppb	281,689			215,030		
Volume > 50,000 ppb	16,165	cy		12,340	m3	
Solids Specific Gravity	2.51	11 (0.2				
Fresh Water Density	62.4					
In Situ Density	24.2%		3% v/v		tons per cy	
Slurry Density (20% in situ)	5.5%		3% v/v		tons per cy	Ogden Beeman
Dewatered Density (passive pond)	20%		1% v/v		tons per cy	Montgomery Watson
Dewatered Density (mechanical and CDF)	50%		5% v/v		tons per cy	Foth & VanDyke
Treated Density	93.8%		0% v/v		tons per cy	
Arrowhead/Menasha CDF Capacity	1,406,932			1,337,963		
HTTD Treatment Capacity	1,099,327			1,650,000		
Cap Volume	435,300			332,290		
Vitrification Treatment Capacity	4,496,073	cy in situ		2145500.00	tons	
Cost Estimating Parameters & Methodology:						
Interest Rate	6.0%					Not Used
Sales Tax	5.5%					1101 0004
Engineering, Procurement and Construction Mgmt	12.0%					
Contractor Overhead and Profit - Dredging Only	15.0%					
Dredging	13.070					
Debris Sweep	\$16,000	ner acre				Ogden Beeman
Dredge Monitoring (Water Quality)	\$3,000					Ogden Beeman
Sediment Removal QA	\$1,200					
	\$1,200	per day				
Hydraulic - 10-inch Cutterhead	6100 000	4 4 1				_:
Site Preparation		per dredge lau	nen site			pj O. l. D
Mobilization - Equipment		per dredge				Ogden Beeman
Mobilization - Silt Curtain	\$35,000	1:0				Ogden Beeman
Shift Rate (10 hours)		per shift				Ogden Beeman
Dredge Rate		cy in situ per				Ogden Beeman (Oct 11, 2000)
Site Restoration	\$600,000	per dredge lau	nch site			pj
Mechanical - 3 cy bucket						
Dock Construction	\$400,000					pj
Mobilization - Equipment		per dredge				Ogden Beeman
Mobilization - Silt Curtain	\$35,000					Ogden Beeman
Mobilization - Watertight Barge	\$100,000	ea				Ogden Beeman - JAG estimate
Shift Rate (10 hours)		per shift				Ogden Beeman
Dredge Rate	630	cy in situ per	0 hour shift			Ogden Beeman
Offload Stockpile Area Prep.	\$75,000	per area				рj
Free Water per cy Dredged (10%)	20	gal				Ogden Beeman
Offload Crane Mobilization	\$50,000	LS				pj
Site Restoration	\$75,000	LS				pj
High Temperature Thermal Desorption						
Setup Staging Area	\$50,000					pj
Mobilization/Site Prep	\$150,000					Maxymillian
C. F. A.T. A. A.O.A.		per ton				
Sediment Treatment QA	\$2	per ton				•
Ratio of Amending Sand Volume to Dredge Vol.	\$2 0.25					•
	0.25	:1				
Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver	0.25 \$6	:1 per ton				Ole
Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending	0.25 \$6 \$25	:1 per ton per ton				Ole Ole
Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment)	0.25 \$6 \$25 \$75	:1 per ton per ton per ton				Ole Ole Maxymillian
Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing	0.25 \$6 \$25 \$75 \$50,000	er ton per ton per ton LS				Ole Ole
Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material	0.25 \$6 \$25 \$75 \$50,000	:1 per ton per ton per ton				Ole Ole Maxymillian
Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification	0.25 \$6 \$25 \$75 \$50,000	:1 per ton per ton per ton LS per ton	lass ton ner day meliter i	unit)		Ole Ole Maxymillian Maxymillian
Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs)	0.25 \$6 \$25 \$75 \$50,000	:1 per ton per ton per ton LS per ton	lass ton per day melter t	unit)		Ole Ole Maxymillian
Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping	0.25 \$6 \$25 \$75 \$50,000 \$3	:1 per ton per ton per ton LS per ton	lass ton per day melter i	unit)		Ole Ole Maxymillian Maxymillian Unit Cost Study- Minergy
Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs)	0.25 \$6 \$25 \$75 \$50,000 \$3 \$27.0	per ton per ton per ton LS per ton per ton (250 g		unit) m2		Ole Ole Maxymillian Maxymillian
Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping Mobilization/Site Prep	0.25 \$6 \$25 \$75 \$50,000 \$3 \$27.0 \$200,000 9,322,396	per ton per ton per ton LS per ton per ton (250 g	lass ton per day melter to 866,100			Ole Ole Maxymillian Maxymillian Unit Cost Study- Minergy
Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping Mobilization/Site Prep Area	0.25 \$6 \$25 \$75 \$50,000 \$3 \$27.0 \$200,000 9,322,396 1.7	er ton per ton per ton per ton LS per ton per ton (250 g				Ole Ole Maxymillian Maxymillian Unit Cost Study- Minergy
Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping Mobilization/Site Prep Area Sand Cap Depth	0.25 \$6 \$25 \$75 \$50,000 \$3 \$27.0 \$200,000 9,322,396 1.7 \$6	per ton per ton per ton LS per ton per ton LS per ton per ton for (250 g)				Ole Ole Maxymillian Maxymillian Unit Cost Study- Minergy Ogden Beeman
Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping Mobilization/Site Prep Area Sand Cap Depth Sand Placement	0.25 \$6 \$25 \$75 \$50,000 \$3 \$27.0 \$200,000 9,322,396 1.7 \$6	per ton per ton per ton LS per ton per ton LS per ton for (250 g)				Ole Ole Maxymillian Maxymillian Unit Cost Study- Minergy Ogden Beeman
Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping Mobilization/Site Prep Area Sand Cap Depth Sand Placement Sand Purchase	0.25 \$6 \$25 \$75 \$50,000 \$3 \$27.0 \$200,000 9,322,396 1.7 \$6 \$6	per ton per ton per ton LS per ton per ton LS per ton ger ton per ton (250 g				Ole Ole Maxymillian Maxymillian Unit Cost Study- Minergy Ogden Beeman
Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping Mobilization/Site Prep Area Sand Cap Depth Sand Placement Sand Purchase Sand Density Armored Cap Depth Cobbles	0.25 \$6 \$25 \$75 \$50,000 \$3 \$27.0 \$200,000 9,322,396 1.7 \$6 \$6 1.4 1.0 \$30	per ton per ton per ton LS per ton per ton (250 g sf feet per cy per ton tons per cy feet per cy				Ole Ole Maxymillian Maxymillian Unit Cost Study- Minergy Ogden Beeman Ole Means
Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping Mobilization/Site Prep Area Sand Cap Depth Sand Placement Sand Purchase Sand Density Armored Cap Depth Cobbles Cap Placement QA	0.25 \$6 \$25 \$75 \$50,000 \$3 \$27.0 \$200,000 9,322,396 1.7 \$6 \$6 1.4 1.0 \$30 \$100,000	per ton per ton per ton LS per ton per ton (250 g sf feet per cy per ton tons per cy feet per cy LS				Ole Ole Maxymillian Maxymillian Unit Cost Study- Minergy Ogden Beeman Ogden Beeman
Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping Mobilization/Site Prep Area Sand Cap Depth Sand Placement Sand Purchase Sand Density Armored Cap Depth Cobbles Cap Placement QA Long-term O&M	0.25 \$6 \$25 \$75 \$50,000 \$3 \$27.0 \$200,000 9,322,396 1.7 \$6 \$6 1.4 1.0 \$30 \$100,000	per ton per ton per ton LS per ton per ton (250 g sf feet per cy per ton tons per cy feet per cy feet per cy foot foot foot soft foot s				Ole Ole Maxymillian Maxymillian Unit Cost Study- Minergy Ogden Beeman Ogden Beeman Ole Means Ogden Beeman pj
Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping Mobilization/Site Prep Area Sand Cap Depth Sand Placement Sand Purchase Sand Density Armored Cap Depth Cobbles Cap Placement QA	0.25 \$6 \$25 \$75 \$50,000 \$3 \$27.0 \$200,000 9,322,396 1.7 \$6 \$6 1.4 1.0 \$30 \$100,000	per ton per ton per ton LS per ton per ton (250 g sf feet per cy per ton tons per cy feet per cy feet per cy foot foot foot soft foot s				Ole Ole Maxymillian Maxymillian Unit Cost Study- Minergy Ogden Beeman Ole Means Ogden Beeman

Named and CDE	A d		Managha		
Nearshore CDF Land Lease or Purchase	Arrowhead	nor of	Menasha \$1.8		Ole
	8,000	per sf	9,200		Baird
Length	190,000		170,000		Baird
Capping Volume Seeding Area	280,000		250,000		Baird
Sheetpile Wall Length	8,000		9,200		Baird
Sheetpile Depth	30				
Sheetpile Cost		per sf	30 \$19		based on bathymetry
Shot Rock Berm		per lf	\$550		pj Baird
Rip Rap		*	\$250		Baird
Place Treated Material		per lf per cy	\$230 \$2		
Clean Soil Cap		per cy	\$10		pj Baird
Seeding		per sy	\$10		Baird
Mitigation	\$10,000		Ψ1		Tim
Mitigation		per year			Tim
Long-term Monitoring	\$650,000				Anne LTM
Long-term O&M		of capital			pj
Solidification	270	or cupitar			P)
Percent Lime	10%	(w/w)			Montgomery Watson
Lime		per ton	Mixing	\$25 per ton	pj, pug mill mixing
Eline	\$00	perton	Mixing	\$25 per ton	pJ, pug mm mixing
Dewatering - Upland Pond (2 cells)					
Land Lease or Purchase	\$1.80	per sf			Ole
Area	644,791		14.80		2 days slurry + 13 wk solids * 2 cell
Perimeter	3,212		802.9890256		assume square
Depth of Material in Dewatering Cell		feet			based on size at Arrowhead Park
Cell Retention Time	24	hours			Not Used
Cell Depth	10	feet			
Mobilization	\$20,000	LS			pj
Clear and Grub	\$2,000	per acre			pj
Berm Volume		cy per lf			2:1 slope, 8-foot top
Berm Construction		per cy			pj
Rough Grading	\$0.25				pj
Alphalt Liner	\$1.50	per sf			pj, 2 2-inch lifts
Demob/Disposal	\$10,000	LS			pj
Regrade Berm Soils	\$6	per cy			pj
Seed/Sod		per sy			Baird
Dewatering - Mechanical					
Mobilization	\$100,000				pj
Holding Pond-Centrifuge	\$80	per bone dry ton			Global Dewatering
Water Treatment					
Flow Rate (passive dewatering)		gpm			assume operate 24/7
Unit, Purchase (passive dewatering)	\$691,096				рj
Flow Rate (mechanical dewatering)		gpm			
Unit, Purchase (mechanical dewatering)	\$781,094				
Water Treatment (Including Operator)		per 1,000 gallons	3		pj
Water Treatment QA	\$200	per day			pj, 1 sample/day
Dignocal					
Disposal Off-Site Disposal					
Load Soil for Hauling	\$2.80	per ton			pj
Round-trip Hauling		hours			pj
Round-trip Hauling (to Vitrification Facility)		hours			pj
Tipping Fee (non-TSCA)		per ton			St. Paul
Tipping Fee (TSCA)		per ton			St. Paul
Truck Rate		per hour			pj
Truck Load		tons			pj
Institutional Controls					13
Public Education Program	\$100,000				pj
O&M Plans	\$20,000				pj
Deed Restrictions	\$5,000				pj
Annual Costs	,				**
Public Education Program	\$30,000				pj
Maintaining O&M Plans	\$800				pj
Reporting	\$20,000				pj
Long-term Monitoring	\$600,000				Anne LTM
Long-term Monitoring (no action)	\$300,000				Anne LTM

ALTERNATIVE A: No Action

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions	Quantity 1	Units LS		Cost \$5,000
Direct Cap Engineerin	ital: g, Procurement & Construction Managem	ent:		\$5,000 600
Total Cap	ital:			\$5,600
Present Worth of Longer Te Long-term Monitoring (no action)	rm Operating Costs	Years 40	Annual Cost \$300,000	\$4,513,889
Total Prese	ent Worth, Longer Term O&M Costs			\$4,513,889
Total Proj	ect Capital and O&M Cost			\$4,500,000

ALTERNATIVE B: Monitored Natural Recovery

MONITORING/INSTITUTIONAL CONTROLS

Capital Items	Quantity	Units		Cost
Public Education Program	1	LS		\$100,000
O&M Plans	1	LS		\$20,000
Deed Restrictions	1	LS		\$5,000
Direct Capital:				\$125,000
Engineering, Procurement & Co	onstruction Managem	ent:		15,000
Total Capital:				\$140,000
Present Worth of Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring		40	\$600,000	\$9,027,778
Public Education Program		40	\$30,000	\$451,389
Maintaining O&M Plans		40	\$800	\$12,037
Reporting		40	\$20,000	\$300,926
Total Present Worth, Longer Te	rm O&M Costs			\$9,792,130
Total Project Capital and O&	M Cost			\$9,900,000

ALTERNATIVE C1: Dredge Sediment With Off-site Disposal (Passive Dewatering)

SEDIMENT REMOVAL (CUTTERHEAD)

C * 116	0 "	** **		0.4
Capital Items	Quantity	Units		Cost
Site Preparation	2	Each		\$200,000
Mobilization - Equipment and Silt Curtain	1	LS		\$170,000
Debris Sweep	761	acre		\$12,176,000
Dredging - 12 hour shifts	1609	Day	12.37692308	\$9,171,300
Dredge Monitoring (Water Quality)	1609	Day		\$4,827,000
Sediment Removal QA	1609	Day		\$1,930,800
Site Restoration	2	Each		\$1,200,000
Direct Capital:				\$29,675,100
Engineering, Procurement & Co	onstruction Managem	ent:		3,561,012
Contractor Overhead/Profit:	_			4,451,265
Total Capital:				\$37,700,000

SEDIMENT DEWATERING (GRAVITY)

Quantity	Units	Cost
644,791		\$1,160,624
1		\$20,000
	sf	\$29,605
,	cy	\$199,855
		\$161,198
644,791		\$967,187
1	LS	\$10,000
,	cy	\$199,855
71,643	sy	\$71,643
		\$2,819,968
Construction Managem	ent:	338,396
		\$3,200,000
WATER TR	EATMENT	
395	gpm	\$691,096
1,280,733,951	gal	\$512,294
2,253	day	\$450,600
		\$1,653,989
Construction Managem	ent:	198,479
		\$1,900,000
	644,791 1 644,791 33,309 644,791 644,791 1 33,309 71,643 Construction Managem WATER TR 395 1,280,733,951 2,253	644,791 sf 1 LS 644,791 sf 33,309 cy 644,791 sf 644,791 sf 644,791 sf 1 LS 33,309 cy 71,643 sy Construction Management: WATER TREATMENT 395 gpm 1,280,733,951 gal

Capital Items	Quantity	Units	Cost
Solidification	2,015,159	ton	\$50,378,975
Lime Purchase	201,516	ton	\$12,090,960
Soil Loading	2,015,159	ton	\$5,642,445
Soil Hauling	2,015,159	ton	\$9,446,058
Tipping Fees (non-TSCA)	1,995,874	ton	\$85,822,578
Tipping Fees (TSCA)	19,285	ton	\$1,060,680
Direct Capital:			\$164,441,696
Engineering, Pro	ocurement & Construction Managem	ent:	19,733,004
Total Canital:			\$184,200,000

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Construc	tion Manageme	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth of Longer Term Operating Costs Years Annual Cost Long-term Monitoring (no action) 40 \$300,000				\$4,513,889	
	Total Present Worth, Longer Term O&	M Costs			\$4,513,889
	Total Project Capital and O&M Co	st			\$4,500,000
	TOTAL COST				\$231,500,000

ALTERNATIVE C2: Dredge Sediment With Off-site Disposal (Mechanical Dewatering)

SEDIMENT REMOVAL (CUTTERHEAD)

Capital Items	Quantity	Units		Cost
Site Preparation	2	Each		\$200,000
Mobilization - Equipment and Silt Curtain	1	LS		\$170,000
Debris Sweep	761	acre		\$12,176,000
Dredging - 12 hour shifts	1609	Day	12.37692308	\$9,171,300
Dredge Monitoring (Water Quality)	1609	Day		\$4,827,000
Sediment Removal QA	1609	Day		\$1,930,800
Site Restoration	2	Each		\$1,200,000
Direct Capital:				\$29,675,100
Engineering, Procurement & Co	onstruction Managem	ent:		3,561,012
Contractor Overhead/Profit:				4,451,265
Total Capital:				\$37,700,000

SEDIMENT DEWATERING (MECHANICAL)

Capital Items Mobilization/Site Prep Dewatering	Quantity 1 403,032	Units LS bdt	Cost \$100,000 \$32,242,544
	Direct Capital:		\$32,342,544
	Engineering, Procurement & Construction Managem	ent:	3,881,105
	Total Capital:		\$36,200,000

WATER TREATMENT

Capital Items	Quantity	Units	Cost
Unit Purchase	484	gpm	\$781,094
Water Treatment (Includes Operator)	1,570,606,822	gal	\$628,243
Water Treatment QA	2,253	day	\$450,600
Direct Capital:			\$1,859,937
Engineering, Procurement	& Construction Manageme	nt:	223,192

Total Capital: \$2,100,000

Capital Items	Quantity	Units	Cost
Soil Loading	806,064	ton	\$2,256,978
Soil Hauling	806,064	ton	\$3,778,423
Tipping Fees (non-TSCA)	798,350	ton	\$34,329,031
Tipping Fees (TSCA)	7,714	ton	\$424,272
Direct Capital:			\$40,788,704
Engineering, Procurement	& Construction Managem	ent:	4,894,645
Total Capital:			\$45,700,000

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Construc	ction Manageme	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth of Long-term Monitoring	of Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term Oc	&M Costs			\$4,513,889
	Total Project Capital and O&M Co	ost			\$4,500,000
	TOTAL COST				\$126,200,000

ALTERNATIVE D: Dredge Sediment, CDF and Off-site Disposal

SEDIMENT REMOVAL (MECHANICAL DREDGING)

Capital Items	Quantity	Units	Cost
Mobilization - Equipment and Silt Curtain	1	LS	\$490,000
Watertight Barges	4	ea	\$400,000
Offload Stockpile Area Prep.	1	LS	\$75,000
Dredging - 12 hour shifts	26	Day	\$234,000
Dredge Monitoring (Water Quality)	26	Day	\$78,000
Sediment Removal OA	26	Day	\$31,200
Offload Crane Mobilization	1	LS	\$50,000
Direct Capital:			\$1,358,200
Engineering, Procurement & C	onstruction Managem	ent:	162,984
Contractor Overhead/Profit:			203,730
Total Capital:			\$1,700,000

SEDIMENT DISPOSAL (Existing NR 500 Commercial Disposal Facility)

Capital Items		Quantity	Units	Cost
Solidification		15,939	ton	\$398,475
Lime Purchase		1,594	ton	\$95,640
Soil Loading		15,939	ton	\$44,629
Soil Hauling		15,939	ton	\$74,714
Tipping Fees (TSCA)		15,939	ton	\$876,645
	Direct Capital:			\$1,490,103
	Engineering, Procurement & Constru-	ction Managem	ent:	178,812
	Total Capital:			\$1,700,000

SEDIMENT REMOVAL (10-INCH CUTTERHEAD)

Capital Items		Quantity	Units		Cost
Site Preparation		2	each		\$200,000
Mobilization - Equipme	nt and Silt Curtain	1	LS		\$170,000
Debris Sweep		761	acre		\$12,176,000
Dredging - 12 hour shift	S	1594	Day		\$9,085,800
Dredge Monitoring (Wa		1594	Day		\$4,782,000
Sediment Removal QA	~ */	1594	Day		\$1,912,800
Site Restoration		1	LS		\$600,000
	Direct Capital:				\$28,926,600
	Engineering, Procurement & Constr	ruction Manageme	nt:		3,471,192
	Contractor Overhead/Profit:				4,338,990
	Total Capital:				\$36,700,000
	CDF	CONSTRUCT	ION - ARR	OWHEAD	
C * 116		0 "	¥1. *4		6 4
Capital Items Land Lease or Purchase		Quantity 2,520,000	Units		Cost
Shot Rock/Rip Rap		8,000	sf lf		\$4,536,000 \$6,920,000
Sheetpile Placement		240,000	sf		\$4,560,000
Clean Soil Cap		190,000	cy		\$1,900,000
Seeding		280,000	sy		\$280,000
Mitigation		58	acre		\$578,512
					47.0,2-2
	Direct Capital:				\$18,774,512
	Engineering, Procurement & Constr	ruction Manageme	nt:		2,252,941
					<u> </u>
	Total Capital:				\$21,027,454
	Longer Term Operating Costs		Years	Annual Cost	0150.462
Mitigation			40 40	10,000	\$150,463
Long-term Monitoring Long-term O&M			40	650,000 420,549	\$9,780,093 \$6,327,706
Long-term Occivi			40	420,349	\$0,527,700
	Total Present Worth, Longer Term	O&M Costs			\$16,258,262
		~			
	Total Project Capital and O&M (ost			\$37,300,000
	CD	F CONSTRUC	CTION M	ENIA CILIA	
	CD	r CONSTRUC	JION - MI	LINASHA	
Capital Items		Quantity	Units		Cost
Mobilization/Site Prep		27,778	sf		\$50,000
Shot Rock/Rip Rap		9,200	lf		\$7,360,000
Sheetpile Placement		276,000	sf		\$5,244,000
Clean Soil Cap		170,000	cy		\$1,700,000
Seeding		250,000	sy		\$250,000
Mitigation		52	acre		\$516,529
	P: 10 :11				615 120 520
	Direct Capital:	ti M			\$15,120,529
	Engineering, Procurement & Constr	uction Manageme	nt:		1,814,463
	Total Capital:				\$16,934,992
	-				* *
Present Worth of	Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	10,000	\$150,463
Long-term Monitoring			40	650,000	\$9,780,093
Long-term O&M			40	338,700	\$5,096,178
	Total Progent Worth Langue Torm	O&M Costs			\$15.006.72A
	Total Present Worth, Longer Term	O&W COSIS			\$15,026,734
	Total Project Capital and O&M (Cost			\$32,000,000
	• •				
		WATED T	DEATMEN	JT.	
		WATER T	REATMEN	NT	
Capital Items		Quantity	Units	ŇT	Cost
Unit Purchase		Quantity 484	Units gpm	VΤ	\$781,094
Unit Purchase Water Treatment (Include	les Operator)	Quantity 484 1,555,902,577	Units gpm gal	VΤ	\$781,094 \$622,361
Unit Purchase	des Operator)	Quantity 484	Units gpm	VΤ	\$781,094
Unit Purchase Water Treatment (Include	• ,	Quantity 484 1,555,902,577	Units gpm gal	VT	\$781,094 \$622,361 \$450,600
Unit Purchase Water Treatment (Include	Direct Capital:	Quantity 484 1,555,902,577 2,253	Units gpm gal day	VT	\$781,094 \$622,361 \$450,600 \$1,854,055
Unit Purchase Water Treatment (Include	• ,	Quantity 484 1,555,902,577 2,253	Units gpm gal day	VT	\$781,094 \$622,361 \$450,600
Unit Purchase Water Treatment (Include	Direct Capital:	Quantity 484 1,555,902,577 2,253	Units gpm gal day	VT	\$781,094 \$622,361 \$450,600 \$1,854,055

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Construc	ction Managem	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth Long-term Monitoring	of Longer Term Operating Costs (no action) Total Present Worth, Longer Term Od	&M Costs	Years 40	Annual Cost \$300,000	\$4,513,889 \$4,513,889
	Total Project Capital and O&M Co	st			\$4,500,000
	TOTAL COST				\$116,000,000

ALTERNATIVE E: Dredge Sediment and Thermal Treatment

Total Capital:

SEDIMENT REMOVAL (10-INCH CUTTERHEAD)

Capital Items	Quantity	Units	Cost
Site Preparation	2	Each	\$200,000
Mobilization - Equipment and Silt Curtain	1	LS	\$170,000
Debris Sweep	761	acre	\$12,176,000
Dredging - 12 hour shifts	1609	Day	\$9,171,300
Dredge Monitoring (Water Quality)	1609	Day	\$4,827,000
Sediment Removal QA	1609	Day	\$1,930,800
Site Restoration	2	Each	\$1,200,000
Direct Capital:			\$29,675,100
Engineering, Procurement & Construction Management:			3,561,012
Contractor Overhead/Profit:			4,451,265
Total Capital:			\$37,700,000

SEDIMENT DEWATERING (GRAVITY)

Capital Items		Quantity	Units	Cost
Land Lease or Purchase		644,791	sf	\$1,160,624
Mobilization		1	LS	\$20,000
Clear and Grub		644,791	sf	\$29,605
Berm Construction		33,309	cy	\$199,855
Rough Grading		644,791	sf	\$161,198
Liner Placement		644,791	sf	\$967,187
Demob/Disposal		1	LS	\$10,000
Regrade		33,309	cy	\$199,855
Seed/Sod		71,643	sy	\$71,643
	Direct Capital:			\$2,819,968
	Engineering, Procurement & Constr	uction Managem	ent:	338,396

\$3,200,000

WATER TREATMENT

Capital Items	Quantity	Units	Cost
Unit Purchase	395	gpm	\$691,096
Water Treatment (Includes Operator)	1,280,733,951	gal	\$512,294
Water Treatment QA	2,253	day	\$450,600
Direct Capital:			\$1,653,989
Engineering, Procurement & Construction Management:			198,479

SEDIMENT TREATMENT (VITRIFICATION 1x250 tons Integrated Storage Unit)

	`			8	,	
Capital Items		Quantity	Units			Cost
Sediment Treatment		2,015,159	ton			\$54,409,293
Soil Loading		2,015,159	ton			\$5,642,445
Soil Hauling		2,015,159	ton			\$2,361,514
	Direct Capital:					\$62,413,252
	Engineering, Procurement & Constru	action Manageme	ent:			\$7,489,590
	Total Capital:					\$69,900,000

\$1,900,000

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Construc	ction Managem	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth of Long-term Monitoring	of Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term Od	&M Costs			\$4,513,889
	Total Project Capital and O&M Co	st			\$4,500,000
	TOTAL COST				\$117,200,000

ALTERNATIVE F: Cap Sediment to Maximum Extent Possible, Dredge to CDF and Off-site Disposal

SEDIMENT REMOVAL (MECHANICAL DREDGING)

Capital Items	Quantity	Units	Cost
Mobilization - Equipment and Silt Curtain	1	LS	\$490,000
Watertight Barges	4	ea	\$400,000
Offload Stockpile Area Prep.	1	LS	\$75,000
Dredging - 12 hour shifts	26	Day	\$234,000
Dredge Monitoring (Water Quality)	26	Day	\$78,000
Sediment Removal QA	26	Day	\$31,200
Offload Crane Mobilization	1	LS	\$50,000
Direct Capital:			\$1,358,200
Engineering, Procurement & Co	nstruction Managem	ent:	162,984
Contractor Overhead/Profit:			203,730
Total Capital:			\$1,700,000

SEDIMENT DISPOSAL (Existing NR 500 Commercial Disposal Facility)

Capital Items		Quantity	Units	Cost
Solidification		19,286	ton	\$482,150
Lime Purchase		1,929	ton	\$115,740
Soil Loading		19,286	ton	\$54,001
Soil Hauling		19,286	ton	\$90,403
Tipping Fees (TSCA)		19,286	ton	\$1,060,730
	Direct Capital:			\$1,803,024
	Engineering, Procurement & Const	truction Managem	ent:	216,363
				-

	CA	PPING		
Capital Items	Quantity	Units		Cost
Mobilization/Site Prep	1	LS		\$200,000
Sand Purchase	805,639	tons		\$4,833,835
Sand Placement	575,457	cy		\$3,452,739
Cobble Purchase and Placement	345,274	cy		\$10,358,218
Cap Placement QA	1	LS		\$100,000
Direct Capital:				\$18,944,792
Engineering, Procur	rement & Construction Managem	ent:		2,273,375
Total Capital:				\$21,218,167
Present Worth of Longer Term Open	rating Costs	Years	Annual Cost	
Monitoring/O&M Long-term Monitoring		40	\$400,000	\$6,018,519
Long-term O&M		40	\$424,363	\$6,385,097
Total Present Worth	n, Longer Term O&M Costs			\$12,403,616
Total Project Capi	tal and O&M Cost			\$33,600,000

Total Capital:

\$2,000,000

SEDIMENT REMOVAL (10-INCH CUTTERHEAD)

G 1: 11:		O 45	** •		
Capital Items Site Preparation		Quantity 2	Units Each		Cost \$200,000
Mobilization - Equipme	ent and Silt Curtain	1	LS		\$170,000
Debris Sweep		761	acre		\$12,176,000
Dredging - 12 hour shift		1179	Day		\$6,720,300
Dredge Monitoring (Wa	nter Quality)	1179	Day		\$3,537,000
Sediment Removal QA		1179	Day		\$1,414,800
Site Restoration		2	Each		\$1,200,000
	Direct Capital:				\$25,418,100
	Engineering, Procurement & Const	truction Manageme	ent:		3,050,172
	Contractor Overhead/Profit:				3,812,715
	Total Capital:				\$32,300,000
		WATER TR	EATMENT		
Capital Items		Quantity	Units		Cost
Unit Purchase		484	gpm		\$781,094
Water Treatment (Inclu	des Operator)	1,151,157,170	gal		\$460,463
Water Treatment QA		1,672	Day		\$334,400
	Direct Capital:				\$1,575,957
	Engineering, Procurement & Const	truction Managem	ent:		189,115
	Engineering, Froedrement & Cons	araction managem	ant.		107,113
	Total Capital:				\$1,800,000
	CDF	CONSTRUCT	TION - ARR	OWHEAD	
Capital Items		Quantity	Units		Cost
Land Lease or Purchase		2,520,000	sf		\$4,536,000
Shot Rock/Rip Rap		8,000	lf		\$6,920,000
Sheetpile Placement Clean Soil Cap		240,000 190,000	sf cy		\$4,560,000 \$1,900,000
Seeding		280,000	sy		\$280,000
Mitigation		58	acre		\$578,512
	Direct Capital:		4.		\$18,774,512
	Engineering, Procurement & Const	ruction Managem	ent:		2,252,941
	Total Capital:				\$21,027,454
Present Worth o	f Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	10,000	\$150,463
Long-term Monitoring			40	650,000	\$9,780,093
Long-term O&M			40	420,549	\$6,327,706
	Total Present Worth, Longer Term	O&M Costs			\$16,258,262
	Total Project Capital and O&M	Cost			\$37,300,000
		INSTITUTIO	NAL CONT	ROLS	
Capital Items		Quantity	Units		Cost
Deed Restrictions		1	LS		\$5,000
	Direct Capital:				\$5,000
	Engineering, Procurement & Const	truction Manageme	ent:		600
	<i>c c</i> ,	Č			
	Total Capital:				\$5,600
	f Longer Term Operating Costs		Years	Annual Cost	¢4.512.000
Long-term Monitoring (no action)		40	\$300,000	\$4,513,889
	Total Present Worth, Longer Term	O&M Costs			\$4,513,889
	Total Project Capital and O&M	Cost			\$4,500,000
	TOTAL COST				\$113,200,000

BASIS FOR PRELIMINARY COST ESTIMATES

SEDIMENT REMEDIATION

FOX RIVER, WISCONSIN

LITTLE LAKE BUTTE DES MORTS Action Level - 250 ppb

Material Handling Assumptions:							
Volume > 250 ppb	1,322,818	cv	697 ac	1,009,785	m3		Acres corresponds to dredge
Volume > 125 ppb	1,689,173		057 40	1,289,445			footprint area
Volume > 500 ppb	1,023,621			781,390			
Volume > 1,000 ppb	784,192			598,620			
Volume > 5,000 ppb	281,689			215,030			
Volume > 50,000 ppb	16,165	cy		12,340	m3		
Solids Specific Gravity	2.51						
Fresh Water Density	62.4						
In Situ Density	24.2%	w/w 1	1.3% v/v	0.99	tons per cy		
Slurry Density (20% in situ)	5.5%		2.3% v/v		tons per cy		Ogden Beeman
Dewatered Density (passive pond)	20%		9.1% v/v		tons per cy		Montgomery Watson
Dewatered Density (mechanical and CDF)	50%		8.5% v/v		tons per cy]	Foth & VanDyke
Treated Density	93.8%		0.0% v/v		tons per cy		
Arrowhead/Menasha CDF Capacity	1,406,932	-		1,337,963			
HTTD Treatment Capacity	1,099,327		u	1,650,000			
Cap Volume	323,701			247,100			
Vitrification Treatment Capacity	4,496,073	cy in sit	u	2145500.00	tons		
Cost Estimating Parameters & Methodology:							
Interest Rate	6.0%]	Not Used
Sales Tax	5.5%						
Engineering, Procurement and Construction Mgmt	12.0%						
Contractor Overhead and Profit - Dredging Only	15.0%						
Dredging	***						
Debris Sweep	\$16,000	1				(Ogden Beeman
Dredge Monitoring (Water Quality)	\$3,000						
Sediment Removal QA	\$1,200	per day					
Hydraulic - 10-inch Cutterhead	6100.000	per dredge l					_:
Site Preparation Mobilization - Equipment	\$135,000		iulicii site				pj Ogden Beeman
Mobilization - Silt Curtain	\$155,000	per dredge					Ogden Beeman
Shift Rate (10 hours)	\$5,700	ner shift					Ogden Beeman
Dredge Rate			r 10 hour shift				Ogden Beeman
Site Restoration		per dredge l					pj
Mechanical - 3 cy bucket		P				1	ro
Dock Construction	\$400,000	LS				1	pj
Mobilization - Equipment	\$455,000	per dredge					Ogden Beeman
Mobilization - Silt Curtain	\$35,000						Ogden Beeman
Mobilization - Watertight Barge	\$100,000	ea					Ogden Beeman - JAG estimate
Shift Rate (10 hours)	\$9,000	per shift					Ogden Beeman
Dredge Rate	630		r 10 hour shift				Ogden Beeman
Dreuge Rate		ner area				1	pj
Offload Stockpile Area Prep.	\$75,000						
Offload Stockpile Area Prep. Free Water per cy Dredged (10%)	\$75,000 20	gal					Ogden Beeman
Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization	\$75,000 20 \$50,000	gal LS				1	Ogden Beeman pj
Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration	\$75,000 20	gal LS				1	Ogden Beeman
Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption	\$75,000 20 \$50,000 \$75,000	gal LS				1 1	Ogden Beeman pj pj
Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area	\$75,000 20 \$50,000 \$75,000	gal LS				1 1 1	Ogden Beeman pj pj pj
Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep	\$75,000 20 \$50,000 \$75,000 \$50,000 \$150,000	gal LS LS				1 1 1	Ogden Beeman pj pj
Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA	\$75,000 20 \$50,000 \$75,000 \$50,000 \$150,000 \$2	gal LS LS				1 1 1	Ogden Beeman pj pj pj
Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol.	\$75,000 20 \$50,000 \$75,000 \$50,000 \$150,000 \$2 0.25	gal LS LS per ton				1 1 1	Ogden Beeman pj pj pj Maxymillian
Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver	\$75,000 20 \$50,000 \$75,000 \$50,000 \$150,000 \$2 0.25 \$6	gal LS LS per ton :1				1 1 1 1	Ogden Beeman pi pi pi Maxymillian Ole
Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending	\$75,000 20 \$50,000 \$75,000 \$150,000 \$2 0.25 \$6 \$25	gal LS LS per ton :1 per ton per ton					Ogden Beeman pi pj pj Maxymillian Ole Ole
Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment)	\$75,000 20 \$50,000 \$75,000 \$50,000 \$150,000 \$2 0.25 \$6 \$25 \$75	gal LS LS per ton :1 per ton per ton per ton					Ogden Beeman pi pi pi Maxymillian Ole Ole Maxymillian
Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing	\$75,000 20 \$50,000 \$75,000 \$150,000 \$150,000 \$2 0.25 \$6 \$25 \$75	gal LS LS per ton :1 per ton per ton per ton LS					Ogden Beeman pi pj pj Maxymillian Ole Ole
Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment)	\$75,000 20 \$50,000 \$75,000 \$150,000 \$150,000 \$2 0.25 \$6 \$25 \$75	gal LS LS per ton :1 per ton per ton per ton					Ogden Beeman pi pi pi Maxymillian Ole Ole Maxymillian
Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material	\$75,000 20 \$50,000 \$75,000 \$150,000 \$150,000 \$2 0.25 \$6 \$25 \$75 \$50,000	gal LS LS per ton :1 per ton per ton per ton per ton per ton per ton LS	glass ton per day melter	unit)			Ogden Beeman pi pi pi Maxymillian Ole Ole Maxymillian
Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping	\$75,000 20 \$50,000 \$75,000 \$150,000 \$150,000 \$2 0.25 \$6 \$25 \$75 \$50,000	gal LS LS per ton :1 per ton per ton per ton per ton per ton per ton LS	glass ton per day melter	unit)			Ogden Beeman pi pi pi Maxymillian Ole Ole Maxymillian Maxymillian
Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping Mobilization/Site Prep	\$75,000 20 \$50,000 \$75,000 \$150,000 \$150,000 \$2 0.25 \$6 \$25 \$75 \$50,000 \$3	gal LS LS per ton :1 per ton per ton per ton per ton per ton (250		ŕ			Ogden Beeman pi pi pi Maxymillian Ole Ole Maxymillian Maxymillian
Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping Mobilization/Site Prep Area	\$75,000 20 \$50,000 \$75,000 \$150,000 \$150,000 \$2 0.25 \$6 \$25 \$75 \$50,000 \$3 \$27.0	gal LS LS per ton :1 per ton per ton per ton LS per ton (250	glass ton per day melter 801,800	unit)			Ogden Beeman pi pi pi Maxymillian Ole Ole Maxymillian Maxymillian Maxymillian Musymillian Maxymillian
Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping Mobilization/Site Prep Area Sand Cap Depth	\$75,000 20 \$50,000 \$75,000 \$150,000 \$150,000 \$2 0.25 \$6 \$25 \$75 \$50,000 \$3 \$27.0	gal LS LS ls per ton er ton per ton per ton LS per ton per ton (250		ŕ			Ogden Beeman pi pi pi pi Maxymillian Ole Ole Maxymillian Maxymillian Maxymillian Unit Cost Study- Minergy Ogden Beeman
Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping Mobilization/Site Prep Area Sand Cap Depth Sand Placement	\$75,000 20 \$50,000 \$75,000 \$150,000 \$150,000 \$2 0.25 \$6 \$25 \$75 \$50,000 \$3 \$27.0	gal LS LS LS per ton per ton per ton per ton per ton per ton (250)		ŕ			Ogden Beeman pi pi pi Maxymillian Ole Ole Maxymillian Maxymillian Maxymillian Unit Cost Study- Minergy Ogden Beeman
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Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping Mobilization/Site Prep Area Sand Cap Depth Sand Placement Sand Purchase Sand Density	\$75,000 20 \$50,000 \$75,000 \$150,000 \$150,000 \$2 0.25 \$6 \$25 \$75 \$50,000 \$33 \$27.0 \$200,000 8,630,293 1.7 \$6 \$6 \$6	gal LS		ŕ			Ogden Beeman pi pi pi Maxymillian Ole Ole Maxymillian Maxymillian Maxymillian Unit Cost Study- Minergy Ogden Beeman
Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping Mobilization/Site Prep Area Sand Cap Depth Sand Placement Sand Purchase Sand Density Armored Cap Depth	\$75,000 20 \$50,000 \$75,000 \$150,000 \$150,000 \$2 0.25 \$6 \$25 \$75 \$50,000 \$3 \$27.0 \$200,000 8,630,293 1.7 \$6 \$6 1.4	gal LS		ŕ			Ogden Beeman pi pi pi Maxymillian Ole Ole Maxymillian Maxymillian Munit Cost Study- Minergy Ogden Beeman Ogden Beeman
Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping Mobilization/Site Prep Area Sand Cap Depth Sand Placement Sand Purchase Sand Density	\$75,000 20 \$50,000 \$75,000 \$150,000 \$150,000 \$2 0.25 \$6 \$25 \$75 \$50,000 \$3 \$27.0 \$200,000 8,630,293 1.7 \$6 \$6 1.4	gal LS		ŕ			Ogden Beeman pi pi pi Maxymillian Ole Ole Maxymillian Maxymillian Maxymillian Unit Cost Study- Minergy Ogden Beeman
Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping Mobilization/Site Prep Area Sand Cap Depth Sand Placement Sand Placement Sand Purchase Sand Density Armored Cap Depth Cobbles	\$75,000 20 \$50,000 \$75,000 \$150,000 \$150,000 \$2 0.25 \$6 \$25 \$75 \$50,000 \$33 \$27.0 \$200,000 8,630,293 1.7 \$6 \$6 \$1.4 1.0 \$30 \$100,000	gal LS		ŕ			Ogden Beeman pi pi pi Maxymillian Ole Ole Ole Maxymillian Maxymillian Munit Cost Study- Minergy Ogden Beeman Ole Means
Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping Mobilization/Site Prep Area Sand Cap Depth Sand Placement Sand Purchase Sand Density Armored Cap Depth Cobbles Cap Placement QA	\$75,000 20 \$50,000 \$75,000 \$150,000 \$150,000 \$2 0.25 \$6 \$25 \$75 \$50,000 \$33 \$27.0 \$200,000 8,630,293 1.7 \$6 \$6 \$1.4 1.0 \$30 \$100,000	gal LS LS per ton :1 per ton per ton per ton per ton per ton (250) sf feet per cy per ton tons per cy feet per cy feet per cy for Capital		ŕ			Ogden Beeman pi pi pi Maxymillian Ole Ole Maxymillian Maxymillian Unit Cost Study- Minergy Ogden Beeman Ole Means Ogden Beeman

V I OPP					
Nearshore CDF	Arrowhead		Menasha		01
Land Lease or Purchase		per sf	\$1.8		Ole
Length	8,000		9,200		Baird
Capping Volume	190,000	cy	170,000		Baird
Seeding Area	280,000	sy	250,000		Baird
Sheetpile Wall Length	8,000	lf	9,200		Baird
Sheetpile Depth	30		30		based on bathymetry
Sheetpile Cost		per sf	\$19		pj
Shot Rock Berm		per lf	\$550		Baird
Rip Rap		•	\$250		Baird
		per lf	\$230		
Place Treated Material		per cy			pj B.: I
Clean Soil Cap		per cy	\$10		Baird
Seeding		per sy	\$1		Baird
Mitigation	\$10,000				Tim
	\$10,000	per year			Tim
Long-term Monitoring	\$650,000	per year			Anne LTM
Long-term O&M	2%	of capital			pj
Solidification					
Percent Lime	10%	(w/w)			Montgomery Watson
Lime		per ton	Mixing	\$25 per ton	pj, pug mill mixing
Ellife	\$00	perton	Mixing	\$25 per ton	pj, pug iiiii iiixiiig
Dewatering - Upland Pond (2 cells)					
Land Lease or Purchase	¢1.00	per sf			Ole
Area	644,791				2 days slurry + 13 wk solids * 2 cell
Perimeter	3,212				assume square
Depth of Material in Dewatering Cell		feet			based on size at Arrowhead Park
Cell Retention Time	24	hours			Not Used
Cell Depth	10	feet			
Mobilization	\$20,000	LS			pj
Clear and Grub	\$2,000	per acre			pj
Berm Volume		cy per lf			2:1 slope, 8-foot top
Berm Construction		per cy			pj
Rough Grading	\$0.25				_
					pj ni 2.2 inch lifts
Alphalt Liner	\$1.50				pj, 2 2-inch lifts
Demob/Disposal	\$10,000				pj
Regrade Berm Soils		per cy			pj
Seed/Sod	\$1	per sy			Baird
Dewatering - Mechanical					
Mobilization	\$100,000				pj
Holding Pond-Centrifuge	\$80	per bone dry ton			Global Dewatering
		,			
Water Treatment					
Flow Rate (passive dewatering)	395	gpm			assume operate 24/7
Unit, Purchase (passive dewatering)	\$691,096				
Flow Rate (mechanical dewatering)		gpm			pj
Unit, Purchase (mechanical dewatering)	\$781,094				
Water Treatment (Including Operator)		per 1,000 gallons	3		pj
Water Treatment QA	\$200	per day			pj, 1 sample/day
<u>Disposal</u>					
Off-Site Disposal					
Load Soil for Hauling	\$2.80	per ton			pj
Round-trip Hauling	2	hours			pj
Round-trip Hauling (to Vitrification Facility)	0.5	hours			pj
Tipping Fee (non-TSCA)	\$43	per ton			St. Paul
Tipping Fee (TSCA)		per ton			St. Paul
Truck Rate		per hour			
Truck Load		tons			pj :
	32	tons			pj
Institutional Controls	0100.000				
Public Education Program	\$100,000				pj
O&M Plans	\$20,000				pj
Deed Restrictions	\$5,000				pj
Annual Costs					
Public Education Program	\$30,000				pj
Maintaining O&M Plans	\$800				pj
Reporting	\$20,000				pj
Long-term Monitoring	\$600,000				Anne LTM
Long-term Monitoring (no action)	\$300,000				Anne LTM
Zong term momenting (no action)	\$300,000				· ······· Livi

ALTERNATIVE A: No Action

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions	Quantity 1	Units LS		Cost \$5,000
Direct Cap Engineerin	ital: g, Procurement & Construction Managem	ent:		\$5,000 600
Total Cap	ital:			\$5,600
Present Worth of Longer Te Long-term Monitoring (no action)	rm Operating Costs	Years 40	Annual Cost \$300,000	\$4,513,889
Total Prese	ent Worth, Longer Term O&M Costs			\$4,513,889
Total Proj	ect Capital and O&M Cost			\$4,500,000

ALTERNATIVE B: Monitored Natural Recovery

MONITORING/INSTITUTIONAL CONTROLS

Capital Items	Quantity	Units		Cost
Public Education Program	1	LS		\$100,000
O&M Plans	1	LS		\$20,000
Deed Restrictions	1	LS		\$5,000
Direct Capital:				\$125,000
Engineering, Procurement &	Construction Managem	ent:		15,000
Total Capital:				\$140,000
Present Worth of Longer Term Operating Co	osts	Years	Annual Cost	
Long-term Monitoring		40	\$600,000	\$9,027,778
Public Education Program		40	\$30,000	\$451,389
Maintaining O&M Plans		40	\$800	\$12,037
Reporting		40	\$20,000	\$300,926
Total Present Worth, Longer	Term O&M Costs			\$9,792,130
Total Project Capital and C	D&M Cost			\$9,900,000

ALTERNATIVE C1: Dredge Sediment With Off-site Disposal (Passive Dewatering)

SEDIMENT REMOVAL (CUTTERHEAD)

Capital Items	Quantity	Units		Cost
Site Preparation	2	Each		\$200,000
Mobilization - Equipment and Silt Curtain	1	LS		\$170,000
Debris Sweep	697	acre		\$11,152,000
Dredging - 12 hour shifts	1260	Day	9.692307692	\$7,182,000
Dredge Monitoring (Water Quality)	1260	Day		\$3,780,000
Sediment Removal QA	1260	Day		\$1,512,000
Site Restoration	2	Each		\$1,200,000
Direct Capital:				\$25,196,000
Engineering, Procurement & O	Construction Managem	ent:		3,023,520
Contractor Overhead/Profit:				3,779,400
Total Capital:				\$32,000,000

SEDIMENT DEWATERING (GRAVITY)

Capital Items	Quantity	Units	Cost
Land Lease or Purchase	644,791	sf	\$1,160,624
Mobilization	ĺ	LS	\$20,000
Clear and Grub	644,791	sf	\$29,605
Berm Construction	33,309	cy	\$199,855
Rough Grading	644,791	sf	\$161,198
Liner Placement	644,791	sf	\$967,187
Demob/Disposal	1	LS	\$10,000
Regrade	33,309	cy	\$199,855
Seed/Sod	71,643	sy	\$71,643
Direct Capital:			\$2,819,968
Engineering, Procurement	& Construction Manageme	ent:	338,396
Total Capital:			\$3,200,000
Total Capital.			\$3,200,000
	WATER TR	EATMENT	
Unit Purchase	395	gpm	\$691,096
Water Treatment (Includes Operator)	1,002,963,239	gal	\$401,185
Water Treatment QA	1,764	day	\$352,800
Direct Capital:			\$1,445,081
Engineering, Procurement	& Construction Manageme	ent:	173,410
Total Capital:			\$1,600,000

Capital Items		Quantity	Units	Cost
Solidification		1,578,104	ton	\$39,452,600
Lime Purchase		157,811	ton	\$9,468,660
Soil Loading		1,578,104	ton	\$4,418,691
Soil Hauling		1,578,104	ton	\$7,397,363
Tipping Fees (non-TSCA)	1,558,819	ton	\$67,029,213
Tipping Fees (TSCA)		19,285	ton	\$1,060,680
	Direct Capital:			\$128,827,207
	Engineering, Procurement & Consti	ruction Managem	ent:	15,459,265
	Total Capital:			\$144,300,000

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Construc	ction Manageme	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth of Long-term Monitoring	of Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term Oc	&M Costs			\$4,513,889
	Total Project Capital and O&M Co	ost			\$4,500,000
	TOTAL COST				\$185,600,000

ALTERNATIVE C2: Dredge Sediment With Off-site Disposal (Mechanical Dewatering)

Total Capital:

SEDIMENT REMOVAL (CUTTERHEAD)

Capital Items	Quantity	Units		Cost
Site Preparation	2	Each		\$200,000
Mobilization - Equipment and Silt Curtain	1	LS		\$170,000
Debris Sweep	697	acre		\$11,152,000
Dredging - 12 hour shifts	1260	Day	9.692307692	\$7,182,000
Dredge Monitoring (Water Quality)	1260	Day		\$3,780,000
Sediment Removal QA	1260	Day		\$1,512,000
Site Restoration	2	Each		\$1,200,000
Direct Capital:				\$25,196,000
Engineering, Procurement & Cor	struction Managem	ent:		3,023,520
Contractor Overhead/Profit:				3,779,400

SEDIMENT DEWATERING (MECHANICAL)

Capital Items Mobilization/Site Prep Dewatering	Quantity 1 315,621	Units LS bdt	Cost \$100,000 \$25,249,652
	Direct Capital:		\$25,349,652
	Engineering, Procurement & Construction Managem	ent:	3,041,958
	Total Capital:		\$28,400,000

WATER TREATMENT

Capital Items	Quantity	Units	Cost
Unit Purchase	484	gpm	\$781,094
Water Treatment (Includes Operator)	1,229,967,319	gal	\$491,987
Water Treatment QA	1,764	day	\$352,800
Direct Capital:			\$1,625,881
Engineering, Procureme	nt & Construction Manageme	nt:	195,106

Total Capital: \$1,800,000

\$32,000,000

Capital Items	Quantity	Units	Cost
Soil Loading	631,241	ton	\$1,767,476
Soil Hauling	631,241	ton	\$2,958,944
Tipping Fees (non-TSCA)	623,527	ton	\$26,811,672
Tipping Fees (TSCA)	7,714	ton	\$424,272
Direct Capital:			\$31,962,363
Engineering, Procurement &	& Construction Managem	ent:	3,835,484
Total Capital:			\$35,800,000

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Constru	ction Manageme	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth C Long-term Monitoring	of Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term O	&M Costs			\$4,513,889
	Total Project Capital and O&M Co	ost			\$4,500,000
	TOTAL COST				\$102,500,000

ALTERNATIVE D: Dredge Sediment, CDF and Off-site Disposal

SEDIMENT REMOVAL (MECHANICAL DREDGING)

Capital Items	Quantity	Units	Cost
Mobilization - Equipment and Silt Curtain	1	LS	\$490,000
Watertight Barges	4	ea	\$400,000
Offload Stockpile Area Prep.	1	LS	\$75,000
Dredging - 12 hour shifts	26	Day	\$234,000
Dredge Monitoring (Water Quality)	26	Day	\$78,000
Sediment Removal QA	26	Day	\$31,200
Offload Crane Mobilization	1	LS	\$50,000
Direct Capital:			\$1,358,200
Engineering, Procurement & Co	onstruction Managem	ent:	162,984
Contractor Overhead/Profit:			203,730
Total Capital:			\$1,700,000

SEDIMENT DISPOSAL (Existing NR 500 Commercial Disposal Facility)

Capital Items		Quantity	Units	Cost
Solidification		19,286	ton	\$482,150
Lime Purchase		1,929	ton	\$115,740
Soil Loading		19,286	ton	\$54,001
Soil Hauling		19,286	ton	\$90,403
Tipping Fees (TSCA)		19,286	ton	\$1,060,730
	Direct Capital:			\$1,803,024
	Engineering, Procurement & Construc	tion Managem	ent:	216,363
	Total Capital:			\$2,000,000
	Total Capital.			\$2,000,000

SEDIMENT REMOVAL (10-INCH CUTTERHEAD)

		·		ŕ	
Capital Items		Quantity	Units		Cost
Site Preparation		2	each		\$200,000
Mobilization - Equipme	ent and Silt Curtain	1	LS		\$170,000
Debris Sweep		697	acre		\$11,152,000
Dredging - 12 hour shift		1245	Day		\$7,096,500
Dredge Monitoring (W		1245	Day		\$3,735,000
Sediment Removal QA		1245	Day		\$1,494,000
Site Restoration		1	LS		\$600,000
	Direct Conital:				\$24.447.500
	Direct Capital: Engineering, Procurement & Const	truction Managama	nt.		\$24,447,500 2,933,700
	Contractor Overhead/Profit:	iruction Manageme	ant.		3,667,125
	Communication of remedia 1 Torric.				3,007,125
	Total Capital:				\$31,000,000
	CDF	CONSTRUCT	TION - ARR	COWHEAD	
Capital Items		Quantity	Units		Cost
Land Lease or Purchase	3	2,520,000	sf		\$4,536,000
Shot Rock/Rip Rap		8,000	1f		\$6,920,000
Sheetpile Placement		240,000	sf		\$4,560,000
Clean Soil Cap		190,000	cy		\$1,900,000
Seeding		280,000	sy		\$280,000
Mitigation		58	acre		\$578,512
	Direct Capital:		4.		\$18,774,512
	Engineering, Procurement & Const	iruction Manageme	iit.		2,252,941
	Total Capital:				\$21,027,454
Present Worth o	of Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	10,000	\$150,463
Long-term Monitoring			40	650,000	\$9,780,093
Long-term O&M			40	420,549	\$6,327,706
	Total Present Worth, Longer Term	O&M Costs			\$16,258,262
	Total Project Capital and O&M	Cost			\$37,300,000
	Total Troject Capital and Ocen	Cost			357,500,000
	CI	OF CONSTRUC	CTION - MI	ENASHA	
Canital Itams		Quantity	Units		Cost
Capital Items Mobilization/Site Prep		27,778	sf		\$50,000
Shot Rock/Rip Rap		9,200	lf		\$7,360,000
Sheetpile Placement		276,000	sf		\$5,244,000
Clean Soil Cap		170,000	cy		\$1,700,000
Seeding		250,000	sy		\$250,000
Mitigation		52	acre		\$516,529
	Direct Capital:				\$15,120,529
	Engineering, Procurement & Const	truction Manageme	ent:		1,814,463
	Total Capital:				\$16,934,992
	-				
	of Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	10,000	\$150,463
Long-term Monitoring			40	650,000	\$9,780,093
Long-term O&M			40	338,700	\$5,096,178
	Total Present Worth, Longer Term	O&M Costs			\$15,026,734
	,				, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
	Total Project Capital and O&M	Cost			\$32,000,000
		WATER T	REATMEN	NT	
Capital Items			Units		Cost
Unit Purchase		Quantity 484	gpm		\$781,094
Water Treatment (Inclu	des Operator)	1,215,263,074	gal		\$486,105
Water Treatment QA	/	1,764	day		\$352,800
•		÷	-		
	Direct Capital:				\$1,619,999
	Engineering, Procurement & Const	truction Manageme	ent:		194,400
	Total Capital:				\$1,800,000
	i Jiai Capitai.				\$1,000,000

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Construc	ction Manageme	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth o Long-term Monitoring			Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term O& Total Project Capital and O&M Co				\$4,513,889 \$4,500,000
	TOTAL COST				\$110,300,000

ALTERNATIVE E: Dredge Sediment and Thermal Treatment

SEDIMENT REMOVAL (10-INCH CUTTERHEAD)

Capital Items	Quantity	Units	Cost
Site Preparation	2	Each	\$200,000
Mobilization - Equipment and Silt Curtain	1	LS	\$170,000
Debris Sweep	697	acre	\$11,152,000
Dredging - 12 hour shifts	1260	Day	\$7,182,000
Dredge Monitoring (Water Quality)	1260	Day	\$3,780,000
Sediment Removal QA	1260	Day	\$1,512,000
Site Restoration	2	Each	\$1,200,000
Direct Capital:			\$25,196,000
Engineering, Procurement & C	Construction Managem	ent:	3,023,520
Contractor Overhead/Profit:	_		3,779,400
Total Capital:			\$32,000,000

SEDIMENT DEWATERING (GRAVITY)

Capital Items		Quantity	Units	Cost
Land Lease or Purchase		644,791	sf	\$1,160,624
Mobilization		1	LS	\$20,000
Clear and Grub		644,791	sf	\$29,605
Berm Construction		33,309	cy	\$199,855
Rough Grading		644,791	sf	\$161,198
Liner Placement		644,791	sf	\$967,187
Demob/Disposal		1	LS	\$10,000
Regrade		33,309	cy	\$199,855
Seed/Sod		71,643	sy	\$71,643
	Direct Capital:			\$2,819,968
	Engineering, Procurement & Construc	ction Managem	ent:	338,396

Total Capital: \$3,200,000

WATER TREATMENT

Capital Items	Quantity	Units	Cost
Unit Purchase	395	gpm	\$691,096
Water Treatment (Includes Operator)	1,002,963,239	gal	\$401,185
Water Treatment QA	1,764	day	\$352,800
Direct Capital:			\$1,445,081

Total Capital: \$1,600,000

SEDIMENT TREATMENT (VITRIFICATION 1x250 tons Integrated Storage Unit)

Engineering, Procurement & Construction Management:

Capital Items	Quantity	Units	Cost
Sediment Treatment	1,578,103	ton	\$42,608,787
Soil Loading	1,578,103	ton	\$4,418,689
Soil Hauling	1,578,103	ton	\$1,849,340
	Direct Capital:		\$48,876,816
	Engineering, Procurement & Construction Managem	ent:	\$5,865,218
	Total Capital:		\$54,700,000

173,410

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Constru	ction Managem	ent:		\$5,000 600
Total Capital:					\$5,600
Present Worth Long-term Monitoring			Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term O Total Project Capital and O&M Co				\$4,513,889 \$4,500,000
	TOTAL COST				\$96,000,000

ALTERNATIVE F: Cap Sediment to Maximum Extent Possible, Dredge to CDF and Off-site Disposal

SEDIMENT REMOVAL (MECHANICAL DREDGING)

Capital Items	Quantity	Units	Cost
Mobilization - Equipment and Silt Curtain	1	LS	\$490,000
Watertight Barges	4	ea	\$400,000
Offload Stockpile Area Prep.	1	LS	\$75,000
Dredging - 12 hour shifts	26	Day	\$234,000
Dredge Monitoring (Water Quality)	26	Day	\$78,000
Sediment Removal QA	26	Day	\$31,200
Offload Crane Mobilization	1	LS	\$50,000
Direct Capital:			\$1,358,200
Engineering, Procurement & Co	onstruction Managem	ent:	162,984
Contractor Overhead/Profit:			203,730
Total Capital:			\$1,700,000

SEDIMENT DISPOSAL (Existing NR 500 Commercial Disposal Facility)

Capital Items		Quantity	Units	Cost
Solidification		19,286	ton	\$482,150
Cement Purchase		1,929	ton	\$115,740
Soil Loading		19,286	ton	\$54,001
Soil Hauling		19,286	ton	\$90,403
Tipping Fees (TSCA)		19,286	ton	\$1,060,730
	Direct Capital:			\$1,803,024
	Engineering, Procurement & Construc	tion Managem	ent:	216,363
	Total Capital:			\$2,000,000

	CA	APPING		
Capital Items	Quantity	Units		Cost
Mobilization/Site Prep	1	LS		\$200,000
Sand Purchase	745,828	tons		\$4,474,967
Sand Placement	532,734	cy		\$3,196,405
Cobble Purchase and Placement	319,640	cy		\$9,589,215
Cap Placement QA	1	LS		\$100,000
Direct Capital:				\$17,560,587
Engineering, Procurement	& Construction Managem	ent:		2,107,270
Total Capital:				\$19,667,857
Present Worth of Longer Term Operating	Costs	Years	Annual Cost	
Monitoring/O&M				
Long-term Monitoring		40	\$400,000	\$6,018,519
Long-term O&M		40	\$393,357	\$5,918,568
Total Present Worth, Long	ger Term O&M Costs			\$11,937,087
Total Project Capital and	d O&M Cost			\$31,600,000

SEDIMENT REMOVAL (10-INCH CUTTERHEAD)

Capital Items		Quantity	Units	,	Cost
Site Preparation		2	Each		\$200,000
Mobilization - Equipme	nt and Silt Curtain	1	LS		\$170,000
Debris Sweep		697	acre		\$11,152,000
Dredging - 12 hour shift		937	Day		\$5,340,900
Dredge Monitoring (Wa Sediment Removal QA	iter Quality)	937 937	Day Day		\$2,811,000 \$1,124,400
Site Restoration		2	Each		\$1,200,000
Site restoration		-	24011		\$1,200,000
	Direct Capital:				\$21,998,300
	Engineering, Procurement & Const	ruction Managem	ent:		2,639,796
	Contractor Overhead/Profit:				3,299,745
	Total Canitals				\$27,900,000
	Total Capital:				327,900,000
		WATER TR	REATMENT		
Capital Items		Quantity	Units		Cost
Unit Purchase		484	gpm		\$781,094
Water Treatment (Include	des Operator)	914,283,237	gal		\$365,713
Water Treatment QA		1,333	Day		\$266,600
	Direct Capital:				\$1,413,407
	Engineering, Procurement & Const	ruction Managem	ent:		169,609
	Total Capital:				\$1,600,000
	CDF	CONSTRUC	TION - ARR	OWHEAD	
Capital Items			Units		Cost
Land Lease or Purchase		Quantity 2,520,000	sf		\$4,536,000
Shot Rock/Rip Rap		8,000	lf		\$6,920,000
Sheetpile Placement		240,000	sf		\$4,560,000
Clean Soil Cap		190,000	cy		\$1,900,000
Seeding		280,000	sy		\$280,000
Mitigation		58	acre		\$578,512
	Direct Capital:				\$18,774,512
	Engineering, Procurement & Const	ruction Managem	ent:		2,252,941
	Total Capital:				\$21,027,454
Present Worth of	f Longer Term Operating Costs		Years	Annual Cost	921,027,101
Mitigation	Longer Term Operating Costs		40	10,000	\$150,463
Long-term Monitoring			40	650,000	\$9,780,093
Long-term O&M			40	420,549	\$6,327,706
	Total Present Worth, Longer Term	O&M Costs			\$16,258,262
	Total Ducient Conital and O.S.M.	Cont			\$37,300,000
	Total Project Capital and O&M	cost			337,300,000
		INSTITUTIO	NAL CONT	ROLS	
Capital Items		Quantity	Units		Cost
Deed Restrictions		1	LS		\$5,000
	Direct Capital:				\$5,000
	Engineering, Procurement & Const	ruction Managem	ent:		600
	Total Capital:				\$5,600
					44,444
Present Worth of	f Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring (no action)		40	\$300,000	\$4,513,889
	Total Present Worth, Longer Term	O&M Costs			\$4,513,889
	rotal resent worth, Longer Term	COSINI CUSIS			\$4,313,889
	Total Project Capital and O&M	Cost			\$4,500,000
	TOTAL COST				#107 700 000
	TOTAL COST				\$106,600,000

BASIS FOR PRELIMINARY COST ESTIMATES

SEDIMENT REMEDIATION

FOX RIVER, WISCONSIN

LITTLE LAKE BUTTE DES MORTS Action Level - 500 ppb

Material Handling Assumptions:	1 022 (21	(25	701 200		
Volume > 500 ppb Volume > 125 ppb	1,023,621 1,689,173		781,390 m3 1,289,445 m3		Acres corresponds to dredge footprint area
Volume > 250 ppb	1,322,818		1,009,785 m ³		Tootprint area
Volume > 1,000 ppb	784,192		598,620 m ³		
Volume > 5,000 ppb	281,689		215,030 m ³		
Volume > 50,000 ppb	16,165	*	12,340 m ³		
Solids Specific Gravity	2.51		12,5 10 1115		
Fresh Water Density	62.4	lb/ft3			
In Situ Density	24.2%		0.99 tor	ns per cy	
Slurry Density (20% in situ)	5.5%		0.87 tor		Ogden Beeman
Dewatered Density (passive pond)	20%	w/w 9.1% v/v	0.96 tor	is per cy	Montgomery Watson
Dewatered Density (mechanical and CDF)	50%	w/w 28.5% v/v	1.20 tor	is per cy	Foth & VanDyke
Treated Density	93.8%	w/w 60.0% v/v	1.35 tor	is per cy	
Arrowhead/Menasha CDF Capacity	1,406,932	cy in situ	1,337,963 m ³	3	
HTTD Treatment Capacity	1,099,327	cy in situ	1,650,000 tor	1S	
Cap Volume	252,057	cy	192,410 m ³	3	
Vitrification Treatment Capacity	4,496,073	cy in situ	2145500.00 tor	1S	
Cost Estimating Parameters & Methodology:	C 00/				N.W.
Interest Rate	6.0%				Not Used
Sales Tax	5.5%				
Engineering, Procurement and Construction Mgmt Contractor Overhead and Profit - Dredging Only	12.0% 15.0%				
Dredging Dredging	15.0%				
Debris Sweep	\$16,000	ner acre			Ogden Beeman
Dredge Monitoring (Water Quality)	\$3,000				Ogucii Becinan
Sediment Removal QA	\$1,200				
Hydraulic - 10-inch Cutterhead	\$1,200	per day			
Site Preparation	\$100.000	per dredge launch site			рj
Mobilization - Equipment		per dredge			Ogden Beeman
Mobilization - Silt Curtain	\$35,000	1			Ogden Beeman
Shift Rate (10 hours)		per shift			Ogden Beeman
Dredge Rate	1050	cy in situ per 10 hour shift			Ogden Beeman
Site Restoration	\$600,000	per dredge launch site			pj
Mechanical - 3 cy bucket					
Dock Construction	\$400,000	LS			pj
Mobilization - Equipment	\$455,000	per dredge			Ogden Beeman
Mobilization - Silt Curtain	\$35,000	LS			Ogden Beeman
Mobilization - Watertight Barge	\$100,000	ea			Ogden Beeman - JAG estimate
Shift Rate (10 hours)		per shift			Ogden Beeman
Dredge Rate		cy in situ per 10 hour shift			Ogden Beeman
Offload Stockpile Area Prep.	\$75,000				pj
Free Water per cy Dredged (10%)	20				Ogden Beeman
Offload Crane Mobilization	\$50,000				pj
Site Restoration	\$75,000	Lo			pj
High Temperature Thermal Desorption	950,000				_:
Setup Staging Area Mobilization/Site Prep	\$50,000 \$150,000				pj Maxymillian
Sediment Treatment QA		per ton			iviaxyiiiiiiaii
Ratio of Amending Sand Volume to Dredge Vol.	0.25	•			
Sand Purchase and Deliver		per ton			Ole
Blending		per ton			Ole
HTTD (includes off-gas treatment)		per ton			Maxymillian
Stack Testing	\$50,000				Maxymillian
Place Treated Material		per ton			•
Vitrification		•			
Vitrification (unit cost incl Cap and Op Costs)	\$27.0	per ton (250 glass ton per day n	nelter unit)		Unit Cost Study- Minergy
Capping					
Mobilization/Site Prep	\$200,000	500.500			Ogden Beeman
Area Sand Can Donth	7,636,809		m2		
Sand Cap Depth Sand Placement	1.7 \$6	per cy			Ogden Beeman
Sand Purchase		per ton			Ole
Sand Density		tons per cy			
Armored Cap Depth	1.0				
Cobbles		per cy			Means
Cap Placement QA	\$100,000				Ogden Beeman
Long-term O&M		of capital			pj
Long-term Monitoring	\$400,000	per year			Anne LTM

V I OPP					
Nearshore CDF	Arrowhead	c.	Menasha		01
Land Lease or Purchase		per sf	\$1.8		Ole
Length	8,000		9,200		Baird
Capping Volume	190,000	cy	170,000		Baird
Seeding Area	280,000	sy	250,000		Baird
Sheetpile Wall Length	8,000	lf	9,200		Baird
Sheetpile Depth	30	ft	30		based on bathymetry
Sheetpile Cost		per sf	\$19		pj
Shot Rock Berm		per lf	\$550		Baird
Rip Rap		per lf	\$250		Baird
Place Treated Material		per cy	\$250		
			\$10		pj D-i-d
Clean Soil Cap		per cy			Baird
Seeding		per sy	\$1		Baird
Mitigation	\$10,000				Tim
	\$10,000				Tim
Long-term Monitoring	\$650,000				Anne LTM
Long-term O&M	2%	of capital			pj
Solidification					
Percent Lime	10%	(w/w)			Montgomery Watson
Lime	\$60	per ton	Mixing	\$25 per ton	pj, pug mill mixing
				•	
Dewatering - Upland Pond (2 cells)					
Land Lease or Purchase	\$1.80	ner sf			Ole
Area	644,791				2 days slurry + 13 wk solids * 2 cell
Perimeter	3,212				assume square
		feet			based on size at Arrowhead Park
Depth of Material in Dewatering Cell Cell Retention Time		hours			
					Not Used
Cell Depth		feet			
Mobilization	\$20,000				pj
Clear and Grub	\$2,000	per acre			pj
Berm Volume	10.4	cy per lf			2:1 slope, 8-foot top
Berm Construction	\$6	per cy			pj
Rough Grading	\$0.25				pj
Alphalt Liner	\$1.50				pj, 2 2-inch lifts
Demob/Disposal	\$10,000				pj
Regrade Berm Soils		per cy			pj
Seed/Sod					Baird
	\$1	per sy			Baird
Dewatering - Mechanical					
Mobilization	\$100,000				pj
Holding Pond-Centrifuge	\$80	per bone dry ton			Global Dewatering
Water Treatment					
Flow Rate (passive dewatering)	395	gpm			assume operate 24/7
Unit, Purchase (passive dewatering)	\$691,096	LS			pj
Flow Rate (mechanical dewatering)	484	gpm			
Unit, Purchase (mechanical dewatering)	\$781,094	LS			
Water Treatment (Including Operator)	\$0.40	per 1,000 gallons			pj
Water Treatment QA		per day			pj, 1 sample/day
		r y			137 1
Disposal					
Off-Site Disposal					
Load Soil for Hauling	\$2.80	per ton			ni
Round-trip Hauling		hours			pj ni
1 6					pj -:
Round-trip Hauling (to Vitrification Facility)		hours			pj G. D. J.
Tipping Fee (non-TSCA)		per ton			St. Paul
Tipping Fee (TSCA)		per ton			St. Paul
Truck Rate		per hour			pj
Truck Load	32	tons			pj
Institutional Controls					
Public Education Program	\$100,000				pj
O&M Plans	\$20,000				pj
Deed Restrictions	\$5,000				pj
Annual Costs	42,300				19
Public Education Program	\$30,000				pj
Maintaining O&M Plans	\$800				
	\$20,000				pj ni
Reporting	\$20,000 \$600,000				pj
Long-term Monitoring					Anne LTM
Long-term Monitoring (no action)	\$300,000				Anne LTM

ALTERNATIVE A: No Action

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions	Quantity 1	Units LS		Cost \$5,000
Direct Capi Engineering	al: , Procurement & Construction Managem	ent:		\$5,000 600
Total Capi	al:			\$5,600
Present Worth of Longer Term Operating Costs Years Annual Cost Long-term Monitoring (no action) 40 \$300,000				\$4,513,889
Total Preser	at Worth, Longer Term O&M Costs			\$4,513,889
Total Proje	ct Capital and O&M Cost			\$4,500,000

ALTERNATIVE B: Monitored Natural Recovery

MONITORING/INSTITUTIONAL CONTROLS

Capital Items	Quantity	Units		Cost
Public Education Program	1	LS		\$100,000
O&M Plans	1	LS		\$20,000
Deed Restrictions	1	LS		\$5,000
Direct Capital:				\$125,000
Engineering, Procurement & Co	onstruction Managem	ent:		15,000
Total Capital:				\$140,000
Present Worth of Longer Term Operating Costs	s	Years	Annual Cost	
Long-term Monitoring		40	\$600,000	\$9,027,778
Public Education Program		40	\$30,000	\$451,389
Maintaining O&M Plans		40	\$800	\$12,037
Reporting		40	\$20,000	\$300,926
Total Present Worth, Longer To	erm O&M Costs			\$9,792,130
Total Project Capital and O&	M Cost			\$9,900,000

ALTERNATIVE C1: Dredge Sediment With Off-site Disposal (Passive Dewatering)

SEDIMENT REMOVAL (CUTTERHEAD)

Capital Items	Quantity	Units		Cost
Site Preparation	2	Each		\$200,000
Mobilization - Equipment and Silt Curtain	1	LS		\$170,000
Debris Sweep	625	acre		\$10,000,000
Dredging - 12 hour shifts	975	Day	7.5	\$5,557,500
Dredge Monitoring (Water Quality)	975	Day		\$2,925,000
Sediment Removal QA	975	Day		\$1,170,000
Site Restoration	2	Each		\$1,200,000
Direct Capital:				\$21,222,500
Engineering, Procurement & C	onstruction Managem	ent:		2,546,700
Contractor Overhead/Profit:	_			3,183,375
Total Capital:				\$27,000,000

SEDIMENT DEWATERING (GRAVITY)

Capital Items	Quantity	Units	Cost
Land Lease or Purchase	644,791	sf	\$1,160,624
Mobilization	1	LS	\$20,000
Clear and Grub	644,791	sf	\$29,605
Berm Construction	33,309	cy	\$199,855
Rough Grading	644,791	sf	\$161,198
Liner Placement	644,791	sf	\$967,187
Demob/Disposal	1	LS	\$10,000
Regrade	33,309	cy	\$199,855
Seed/Sod	71,643	sy	\$71,643
Direct Capital:			\$2,819,968
Engineering, Procurement &	& Construction Managem	ent:	338,396
Total Capital:			\$3,200,000
	WATER TR	EATMENT	
Unit Purchase	395	gpm	\$691,096
Water Treatment (Includes Operator)	776,111,197	gal	\$310,444
Water Treatment QA	1,365	day	\$273,000
Direct Capital:			\$1,274,540
Engineering, Procurement &	& Construction Managem	ent:	152,945
Total Capital:			\$1,400,000

	, ,	•	•,
Capital Items	Quantity	Units	Cost
Solidification	1,221,165	ton	\$30,529,125
Lime Purchase	122,117	ton	\$7,327,020
Soil Loading	1,221,165	ton	\$3,419,262
Soil Hauling	1,221,165	ton	\$5,724,211
Tipping Fees (non-TSCA)	1,201,880	ton	\$51,680,836
Tipping Fees (TSCA)	19,285	ton	\$1,060,680
Direct Capital:			\$99,741,134
Engineering, Procureme	nt & Construction Manageme	ent:	11,968,936
Total Capital:			\$111,700,000
	INSTITUTIO	NAL CONTROLS	

Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Constru	ction Managemo	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth of Long-term Monitoring	of Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term O	&M Costs			\$4,513,889
	Total Project Capital and O&M Co	ost			\$4,500,000
	TOTAL COST				\$147,800,000

ALTERNATIVE C2: Dredge Sediment With Off-site Disposal (Mechanical Dewatering)

SEDIMENT REMOVAL (CUTTERHEAD)

Capital Items	Quantity	Units		Cost
Site Preparation	2	Each		\$200,000
Mobilization - Equipment and Silt Curtain	1	LS		\$170,000
Debris Sweep	625	acre		\$10,000,000
Dredging - 12 hour shifts	975	Day	7.5	\$5,557,500
Dredge Monitoring (Water Quality)	975	Day		\$2,925,000
Sediment Removal QA	975	Day		\$1,170,000
Site Restoration	2	Each		\$1,200,000
Direct Capital:				\$21,222,500
Engineering, Procurement & Co	nstruction Managem	ent:		2,546,700
Contractor Overhead/Profit:				3,183,375

Total Capital: \$27,000,000

SEDIMENT DEWATERING (MECHANICAL)

Capital Items	Quantity	Units	Cost
Mobilization/Site Prep	1	LS	\$100,000
Dewatering	244,233	bdt	\$19,538,640
	Direct Capital:		\$19,638,640
	Engineering, Procurement & Construction Manage	ment:	2,356,637
	Total Capital:		\$22,000,000

WATER TREATMENT

Capital Items	Quantity	Units	Cost
Unit Purchase	484	gpm	\$781,094
Water Treatment (Includes Operator)	951,771,083	gal	\$380,708
Water Treatment QA	1,365	day	\$273,000
Direct Capital:			\$1,434,802
Engineering, Procuremer	nt & Construction Manageme	ent:	172,176

Total Capital: \$1,600,000

Capital Items	Quantity	Units	Cost
Soil Loading	488,466	ton	\$1,367,705
Soil Hauling	488,466	ton	\$2,289,684
Tipping Fees (non-TSCA)	480,752	ton	\$20,672,334
Tipping Fees (TSCA)	7,714	ton	\$424,272
Direct Capital:			\$24,753,995
Engineering, Procurement & Constru-	ction Managem	ent:	2,970,479
Total Capital:			\$27,700,000

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Constru	ction Manageme	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth of Long-term Monitoring	of Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term O	&M Costs			\$4,513,889
	Total Project Capital and O&M Co	ost			\$4,500,000
	TOTAL COST				\$82,800,000

ALTERNATIVE D: Dredge Sediment, CDF and Off-site Disposal

SEDIMENT REMOVAL (MECHANICAL DREDGING)

Capital Items	Quantity	Units	Cost
Mobilization - Equipment and Silt Curtain	1	LS	\$490,000
Watertight Barges	4	ea	\$400,000
Offload Stockpile Area Prep.	1	LS	\$75,000
Dredging - 12 hour shifts	26	Day	\$234,000
Dredge Monitoring (Water Quality)	26	Day	\$78,000
Sediment Removal QA	26	Day	\$31,200
Offload Crane Mobilization	1	LS	\$50,000
Direct Capital:			\$1,358,200
Engineering, Procurement & Co	onstruction Managem	ent:	162,984
Contractor Overhead/Profit:			203,730
Total Capital:			\$1,700,000

SEDIMENT DISPOSAL (Existing NR 500 Commercial Disposal Facility)

Capital Items		Quantity	Units	Cost
Solidification		19,286	ton	\$482,150
Lime Purchase		1,929	ton	\$115,740
Soil Loading		19,286	ton	\$54,001
Soil Hauling		19,286	ton	\$90,403
Tipping Fees (TSCA)		19,286	ton	\$1,060,730
	Direct Capital:			\$1,803,024
	Engineering, Procurement & Construct	ion Managem	ent:	216,363
	Total Capital:			\$2,000,000

SEDIMENT REMOVAL (10-INCH CUTTERHEAD)

Capital Items		Quantity	Units		Cost
Site Preparation		2	each		\$200,000
Mobilization - Equipme	ent and Silt Curtain	1	LS		\$170,000
Debris Sweep		625	acre		\$10,000,000
Dredging - 12 hour shift	ts	960	Day		\$5,472,000
Dredge Monitoring (W	ater Quality)	960	Day		\$2,880,000
Sediment Removal QA	***	960	Day		\$1,152,000
Site Restoration		1	LS		\$600,000
	Direct Capital:				\$20,474,000
	Engineering, Procurement & Const	ruction Manageme	ent:		2,456,880
	Contractor Overhead/Profit:				3,071,100
	Total Capital:				\$26,000,000
	CDF	CONSTRUCT	TION - ARR	OWHEAD	
C * 116		0 "	***		0.4
Capital Items	_	Quantity	Units		Cost
Land Lease or Purchase Shot Rock/Rip Rap	2	2,520,000 8,000	sf lf		\$4,536,000 \$6,920,000
Sheetpile Placement		240,000	sf		\$4,560,000
Clean Soil Cap		190,000	cy		\$1,900,000
Seeding		280,000	sy		\$280,000
Mitigation		58	acre		\$578,512
Wittigation		36	acre		\$376,312
	Direct Capital:				\$18,774,512
	Engineering, Procurement & Const	ruction Manageme	ent:		2,252,941
	Engineering, Freedrement & Const	ruetion managem			2,202,711
	Total Capital:				\$21,027,454
	of Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	10,000	\$150,463
Long-term Monitoring			40	650,000	\$9,780,093
Long-term O&M			40	420,549	\$6,327,706
	Total Present Worth, Longer Term	O&M Costs			\$16,258,262
	Total Project Capital and O&M	Cost			\$37,300,000
	CI	F CONSTRU	CTION MI	FNA CHA	
	CL	T CONSTRU	CIION - MII	ENASHA	
Capital Items		Quantity	Units		Cost
Mobilization/Site Prep		27,778	sf		\$50,000
Shot Rock/Rip Rap		9,200	lf		\$7,360,000
Sheetpile Placement		276,000	sf		\$5,244,000
Clean Soil Cap		170,000	cy		\$1,700,000
Seeding		250,000	sy		\$250,000
Mitigation		52	acre		\$516,529
	Direct Capital:				\$15,120,529
	Engineering, Procurement & Const	ruction Manageme	ent:		1,814,463
	T + 10 + 1				61(024 002
	Total Capital:				\$16,934,992
Present Worth o	of Longer Term Operating Costs		Years	Annual Cost	
Mitigation	. Longer Term Operating Costs		40	10,000	\$150,463
Long-term Monitoring			40	650,000	\$9,780,093
Long-term O&M			40	338,700	\$5,096,178
	Total Present Worth, Longer Term	O&M Costs			\$15,026,734
	_				
	Total Project Capital and O&M	Cost			\$32,000,000
		WATER T	REATMEN	VТ	
Capital Items		Quantity	Units		Cost
Unit Purchase		484	gpm		\$781,094
Water Treatment (Inclu	des Operator)	937,066,839	gal		\$374,827
Water Treatment (Mela		1,365	day		\$273,000
		y			,000
	Direct Capital:				\$1,428,921
	Engineering, Procurement & Const	ruction Manageme	ent:		171,470
	Total Capital:				\$1,600,000

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Construc	ction Managem	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth of Long-term Monitoring (f Longer Term Operating Costs no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term O&	&M Costs			\$4,513,889
	Total Project Capital and O&M Co	st			\$4,500,000
	TOTAL COST				\$105,100,000

ALTERNATIVE E: Dredge Sediment and Thermal Treatment

SEDIMENT REMOVAL (10-INCH CUTTERHEAD)

Capital Items	Quantity	Units	Cost
Site Preparation	2	Each	\$200,000
Mobilization - Equipment and Silt Curtain	1	LS	\$170,000
Debris Sweep	625	acre	\$10,000,000
Dredging - 12 hour shifts	975	Day	\$5,557,500
Dredge Monitoring (Water Quality)	975	Day	\$2,925,000
Sediment Removal QA	975	Day	\$1,170,000
Site Restoration	2	Each	\$1,200,000
Direct Capital:			\$21,222,500
Engineering, Procurement &	Construction Managem	ent:	2,546,700
Contractor Overhead/Profit:			3,183,375
Total Capital:			\$27,000,000

SEDIMENT DEWATERING (GRAVITY)

Capital Items	Quantity	Units	Cost
Land Lease or Purchase	644,791	sf	\$1,160,624
Mobilization	1	LS	\$20,000
Clear and Grub	644,791	sf	\$29,605
Berm Construction	33,309	cy	\$199,855
Rough Grading	644,791	sf	\$161,198
Liner Placement	644,791	sf	\$967,187
Demob/Disposal	1	LS	\$10,000
Regrade	33,309	cy	\$199,855
Seed/Sod	71,643	sy	\$71,643
Direct Ca	pital:		\$2,819,968
Engineeri	ing, Procurement & Construction Managem	ent:	338,396

Total Capital: \$3,200,000

WATER TREATMENT

Capital Items	Quantity	Units	Cost
Unit Purchase	395	gpm	\$691,096
Water Treatment (Includes Operator)	776,111,197	gal	\$310,444
Water Treatment QA	1,365	day	\$273,000
Direct Capital:			\$1,274,540
Engineering, Procuremen	t & Construction Manageme	nt:	152,945

Total Capital: \$1,400,000

SEDIMENT TREATMENT (VITRIFICATION 1x250 tons Integrated Storage Unit)

Capital Items	Quantity	Units	Cost
Sediment Treatment	1,221,165	ton	\$32,971,455
Soil Loading	1,221,165	ton	\$3,419,262
Soil Hauling	1,221,165	ton	\$1,431,053
-	Direct Capital:		\$37,821,769
	Engineering, Procurement & Construction Managem	ent:	\$4,538,612

Total Capital: \$42,400,000

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Constru	ction Managem	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth Long-term Monitoring	of Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term O	&M Costs			\$4,513,889
	Total Project Capital and O&M Co	ost			\$4,500,000
	TOTAL COST				\$78,500,000

ALTERNATIVE F: Cap Sediment to Maximum Extent Possible, Dredge to CDF and Off-site Disposal

SEDIMENT REMOVAL (MECHANICAL DREDGING)

Capital Items	Quantity	Units	Cost
Mobilization - Equipment and Silt Curtain	1	LS	\$490,000
Watertight Barges	4	ea	\$400,000
Offload Stockpile Area Prep.	1	LS	\$75,000
Dredging - 12 hour shifts	26	Day	\$234,000
Dredge Monitoring (Water Quality)	26	Day	\$78,000
Sediment Removal QA	26	Day	\$31,200
Offload Crane Mobilization	1	LS	\$50,000
Direct Capital:			\$1,358,200
Engineering, Procurement & Co	onstruction Managem	ent:	162,984
Contractor Overhead/Profit:			203,730
Total Capital:			\$1,700,000

SEDIMENT DISPOSAL (Existing NR 500 Commercial Disposal Facility)

Capital Items		Quantity	Units	Cost
Solidification		19,286	ton	\$482,150
Cement Purchase		1,929	ton	\$115,740
Soil Loading		19,286	ton	\$54,001
Soil Hauling		19,286	ton	\$90,403
Tipping Fees (TSCA)		19,286	ton	\$1,060,730
	Direct Capital:			\$1,803,024
	Engineering, Procurement & Constr	uction Manageme	ent:	216,363

	CA	APPING		
Capital Items	Quantity	Units		Cost
Mobilization/Site Prep	1	LS		\$200,000
Sand Purchase	659,971	tons		\$3,959,827
Sand Placement	471,408	cy		\$2,828,448
Cobble Purchase and Placement	282,845	cy		\$8,485,343
Cap Placement QA	1	LS		\$100,000
Direct Capital:				\$15,573,617
Engineering, Procuremen	t & Construction Managem	ent:		1,868,834
Total Capital:				\$17,442,452
Present Worth of Longer Term Operating	Costs	Years	Annual Cost	
Monitoring/O&M				
Long-term Monitoring		40	\$400,000	\$6,018,519
Long-term O&M		40	\$348,849	\$5,248,886
Total Present Worth, Long	ger Term O&M Costs			\$11,267,405
Total Project Capital an	d O&M Cost			\$28,700,000

Total Capital:

\$2,000,000

SEDIMENT REMOVAL (10-INCH CUTTERHEAD)

Capital Items Site Preparation		Quantity 2	Units Each		Cost \$200,000
Mobilization - Equipme	nt and Silt Curtain	1	LS		\$170,000
Debris Sweep		625	acre		\$10,000,000
Dredging - 12 hour shift		720	Day		\$4,104,000
Dredge Monitoring (Wa	ter Quality)	720	Day		\$2,160,000
Sediment Removal QA		720	Day		\$864,000
Site Restoration		2	Each		\$1,200,000
	Direct Capital:				\$18,698,000
	Engineering, Procurement & Const	ruction Managem	ent:		2,243,760
	Contractor Overhead/Profit:				2,804,700
	Total Capital:				\$23,700,000
		WATER TR	EATMENT		
Capital Items		Quantity	Units		Cost
Unit Purchase		484	gpm		\$781,094
Water Treatment (Include	des Operator)	702,702,086	gal		\$281,081
Water Treatment QA		1,029	Day		\$205,800
	Direct Capital:				\$1,267,975
	Engineering, Procurement & Constr	ruction Managem	ent:		152,157
	Total Capital:				\$1,400,000
	CDF	CONSTRUC	ΓΙΟΝ - ARR	OWHEAD	
Capital Items		Quantity	Units		Cost
Land Lease or Purchase		2,520,000	sf		\$4,536,000
Shot Rock/Rip Rap		8,000	lf		\$6,920,000
Sheetpile Placement Clean Soil Cap		240,000 190,000	sf cy		\$4,560,000 \$1,900,000
Seeding		280,000	sy		\$280,000
Mitigation		58	acre		\$578,512
	Direct Capital:				\$18,774,512
	Engineering, Procurement & Consti	ruction Managem	ent:		2,252,941
	Total Capital:				\$21,027,454
Present Worth of	Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	10,000	\$150,463
Long-term Monitoring			40	650,000	\$9,780,093
Long-term O&M			40	420,549	\$6,327,706
	Total Present Worth, Longer Term	O&M Costs			\$16,258,262
	Total Project Capital and O&M (Cost			\$37,300,000
]	INSTITUTIO	NAL CONT	ROLS	
Capital Items		Quantity	Units		Cost
Deed Restrictions		1	LS		\$5,000
	Direct Capital:				\$5,000
	Engineering, Procurement & Constr	ruction Managem	ent:		600
	Total Capital:				\$5,600
	Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring (no action)		40	\$300,000	\$4,513,889
	Total Present Worth, Longer Term	O&M Costs			\$4,513,889
	Total Project Capital and O&M (Cost			\$4,500,000
	TOTAL COST				\$99,300,000

BASIS FOR PRELIMINARY COST ESTIMATES

SEDIMENT REMEDIATION

FOX RIVER, WISCONSIN

LITTLE LAKE BUTTE DES MORTS Action Level - 1,000 ppb

Matarial III and the advantage of				
Material Handling Assumptions: Volume > 1000 ppb	784,192	cy 526 ac	598,620 m3	Agras garraspands to dradge
Volume > 1000 ppb Volume > 125 ppb	1,689,173		1,289,445 m3	Acres corresponds to dredge footprint area
	1,322,818			lootprint area
Volume > 250 ppb Volume > 500 ppb			1,009,785 m3 781,390 m3	
	1,023,621 281,689			
Volume > 5,000 ppb		•	215,030 m3	
Volume > 50,000 ppb	16,165	cy	12,340 m3	
Solids Specific Gravity	2.51	IL /Q2		
Fresh Water Density		lb/ft3	0.00 +	
In Situ Density	24.2%		0.99 tons per cy	O-4 P
Slurry Density (20% in situ)	5.5%		0.87 tons per cy	Ogden Beeman
Dewatered Density (passive pond)		w/w 9.1% v/v	0.96 tons per cy	Montgomery Watson
Dewatered Density (mechanical and CDF)		w/w 28.5% v/v	1.20 tons per cy	Foth & VanDyke
Treated Density	93.8%		1.35 tons per cy	
Arrowhead/Menasha CDF Capacity	1,406,932 1,099,327	*	1,337,963 m3	
HTTD Treatment Capacity		*	1,650,000 tons	
Cap Volume	148,646	•	113,470 m3	
Vitrification Treatment Capacity	4,496,073	cy in situ	2145500.00 tons	
Cost Estimating Parameters & Methodology:				
Interest Rate	6.0%			Not Used
Sales Tax	5.5%			
Engineering, Procurement and Construction Mgmt	12.0%			
Contractor Overhead and Profit - Dredging Only	15.0%			
Dredging				
Debris Sweep	\$16,000	per acre		Ogden Beeman
Dredge Monitoring (Water Quality)	\$3,000			č
Sediment Removal QA		per day		
Hydraulic - 10-inch Cutterhead				
Site Preparation	\$100,000	per dredge launch site		pj
Mobilization - Equipment		per dredge		Ogden Beeman
Mobilization - Silt Curtain	\$35,000	1		Ogden Beeman
Shift Rate (10 hours)		per shift		Ogden Beeman
Dredge Rate	1050	cy in situ per 10 hour shift		Ogden Beeman
Site Restoration		per dredge launch site		pj
Mechanical - 3 cy bucket	, , , , , , ,			13
Dock Construction	\$400,000	LS		pj
Mobilization - Equipment	\$455,000	per dredge		Ogden Beeman
Mobilization - Silt Curtain	\$35,000			Ogden Beeman
				•
Mobilization - Watertight Barge	\$100,000			Ogden Beeman - JAG estimate
Mobilization - Watertight Barge Shift Rate (10 hours)				Ogden Beeman - JAG estimate Ogden Beeman
Shift Rate (10 hours)	\$9,000	per shift		Ogden Beeman
Shift Rate (10 hours) Dredge Rate	\$9,000 630	per shift cy in situ per 10 hour shift		Ogden Beeman Ogden Beeman
Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep.	\$9,000 630 \$75,000	per shift cy in situ per 10 hour shift per area		Ogden Beeman
Shift Rate (10 hours) Dredge Rate	\$9,000 630 \$75,000 20	per shift cy in situ per 10 hour shift per area gal		Ogden Beeman Ogden Beeman pj Ogden Beeman
Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%)	\$9,000 630 \$75,000	per shift cy in situ per 10 hour shift per area gal LS		Ogden Beeman Ogden Beeman pj Ogden Beeman pj
Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration	\$9,000 630 \$75,000 20 \$50,000	per shift cy in situ per 10 hour shift per area gal LS		Ogden Beeman Ogden Beeman pj Ogden Beeman
Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization	\$9,000 630 \$75,000 20 \$50,000	per shift cy in situ per 10 hour shift per area gal LS		Ogden Beeman Ogden Beeman pj Ogden Beeman pj
Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption	\$9,000 630 \$75,000 20 \$50,000 \$75,000	per shift cy in situ per 10 hour shift per area gal LS		Ogden Beeman Ogden Beeman pj Ogden Beeman pj pj
Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area	\$9,000 630 \$75,000 20 \$50,000 \$75,000 \$150,000	per shift cy in situ per 10 hour shift per area gal LS		Ogden Beeman Ogden Beeman pj Ogden Beeman pj pj
Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep	\$9,000 630 \$75,000 20 \$50,000 \$75,000 \$150,000	per shift cy in situ per 10 hour shift per area gal LS LS		Ogden Beeman Ogden Beeman pj Ogden Beeman pj pj
Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA	\$9,000 630 \$75,000 20 \$50,000 \$75,000 \$150,000 \$2 0.25	per shift cy in situ per 10 hour shift per area gal LS LS		Ogden Beeman Ogden Beeman pj Ogden Beeman pj pj
Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol.	\$9,000 630 \$75,000 20 \$50,000 \$75,000 \$150,000 \$2 0.25	per shift cy in situ per 10 hour shift per area gal LS LS LS per ton :1 per ton		Ogden Beeman Ogden Beeman pj Ogden Beeman pj pj pj Maxymillian
Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver	\$9,000 630 \$75,000 20 \$50,000 \$75,000 \$150,000 \$2 0.25 \$6 \$25	per shift cy in situ per 10 hour shift per area gal LS LS per ton :1 per ton per ton		Ogden Beeman Ogden Beeman pj Ogden Beeman pj pj pj Maxymillian
Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending	\$9,000 630 \$75,000 20 \$50,000 \$75,000 \$150,000 \$2 0.25 \$6 \$25	per shift cy in situ per 10 hour shift per area gal LS LS LS per ton :1 per ton per ton per ton per ton		Ogden Beeman Ogden Beeman pj Ogden Beeman pj pj pj Maxymillian Ole Ole
Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment)	\$9,000 630 \$75,000 20 \$50,000 \$75,000 \$150,000 \$2 0.25 \$6 \$25 \$75 \$50,000	per shift cy in situ per 10 hour shift per area gal LS LS LS per ton :1 per ton per ton per ton per ton		Ogden Beeman Ogden Beeman pi Ogden Beeman pj pj pj Maxymillian Ole Ole Maxymillian
Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing	\$9,000 630 \$75,000 20 \$50,000 \$75,000 \$150,000 \$2 0.25 \$6 \$25 \$75 \$50,000	per shift cy in situ per 10 hour shift per area gal LS LS per ton :1 per ton per ton per ton per ton per ton LS		Ogden Beeman Ogden Beeman pi Ogden Beeman pj pj pj Maxymillian Ole Ole Maxymillian
Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material	\$9,000 630 \$75,000 20 \$50,000 \$75,000 \$150,000 \$2 0.25 \$6 \$25 \$75 \$50,000	per shift cy in situ per 10 hour shift per area gal LS LS per ton :1 per ton per ton per ton per ton per ton LS	melter unit)	Ogden Beeman Ogden Beeman pi Ogden Beeman pj pj pj Maxymillian Ole Ole Maxymillian
Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification	\$9,000 630 \$75,000 20 \$50,000 \$75,000 \$150,000 \$2 0.25 \$6 \$25 \$75 \$50,000	per shift cy in situ per 10 hour shift per area gal LS LS LS per ton :1 per ton	melter unit)	Ogden Beeman Ogden Beeman pj Ogden Beeman pj pj pj Maxymillian Ole Ole Maxymillian Maxymillian
Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping Mobilization/Site Prep	\$9,000 630 \$75,000 20 \$50,000 \$75,000 \$150,000 \$2 0.25 \$6 \$25 \$75 \$50,000 \$3	per shift cy in situ per 10 hour shift per area gal LS LS per ton :1 per ton	,	Ogden Beeman Ogden Beeman pj Ogden Beeman pj pj pj Maxymillian Ole Ole Maxymillian Maxymillian
Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping Mobilization/Site Prep Area	\$9,000 630 \$75,000 20 \$50,000 \$150,000 \$150,000 \$22 0.25 \$6 \$25 \$75 \$50,000 \$3	per shift cy in situ per 10 hour shift per area gal LS LS LS per ton :1 per ton so per ton per ton per ton per ton per ton per ton \$\$546,70\$,	Ogden Beeman Ogden Beeman pj Ogden Beeman pj pj pj pj Maxymillian Ole Ole Maxymillian Maxymillian Maxymillian Unit Cost Study- Minergy
Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping Mobilization/Site Prep Area Sand Cap Depth	\$9,000 630 \$75,000 20 \$50,000 \$75,000 \$150,000 \$2 0.25 \$6 \$225 \$75 \$50,000 \$3 \$27.0 \$200,000 \$3,884,487	per shift cy in situ per 10 hour shift per area gal LS LS LS per ton :1 per ton so per ton per ton per ton per ton (250 glass ton per day to so per ton so per ton	,	Ogden Beeman Ogden Beeman pi Ogden Beeman pi pj pj pj Maxymillian Ole Ole Maxymillian Maxymillian Unit Cost Study- Minergy Ogden Beeman
Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping Mobilization/Site Prep Area Sand Cap Depth Sand Placement	\$9,000 630 \$75,000 20 \$50,000 \$75,000 \$150,000 \$2 0.25 \$6 \$25 \$75 \$50,000 \$3 \$27.0	per shift cy in situ per 10 hour shift per area gal LS LS LS per ton :1 per ton per ton LS per ton per ton per ton the per ton sf feet per cy 546,70	,	Ogden Beeman Ogden Beeman pj Ogden Beeman pj pj pj pj Maxymillian Ole Ole Maxymillian Maxymillian Unit Cost Study- Minergy Ogden Beeman Ogden Beeman
Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping Mobilization/Site Prep Area Sand Cap Depth Sand Placement Sand Placement	\$9,000 630 \$75,000 20 \$50,000 \$75,000 \$150,000 \$150,000 \$2 0.25 \$6 \$25 \$75 \$50,000 \$3 \$27.0	per shift cy in situ per 10 hour shift per area gal LS LS LS per ton :1 per ton per ton per ton LS per ton per ton sf per ton (250 glass ton per day in the state of the stat	,	Ogden Beeman Ogden Beeman pi Ogden Beeman pi pj pj pj Maxymillian Ole Ole Maxymillian Maxymillian Unit Cost Study- Minergy Ogden Beeman
Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping Mobilization/Site Prep Area Sand Cap Depth Sand Placement Sand Purchase Sand Density	\$9,000 630 \$75,000 20 \$50,000 \$75,000 \$150,000 \$150,000 \$2 0.25 \$6 \$25 \$75 \$50,000 \$33 \$27.0 \$200,000 5,884,487 1.7 \$6 \$6 \$6 1.4	per shift cy in situ per 10 hour shift per area gal LS LS LS per ton :1 per ton per ton per ton per ton per ton per ton sf feet per cy per ton tons per cy	,	Ogden Beeman Ogden Beeman pj Ogden Beeman pj pj pj pj Maxymillian Ole Ole Maxymillian Maxymillian Unit Cost Study- Minergy Ogden Beeman Ogden Beeman
Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping Mobilization/Site Prep Area Sand Cap Depth Sand Placement Sand Purchase Sand Density Armored Cap Depth	\$9,000 630 \$75,000 20 \$50,000 \$75,000 \$150,000 \$2 0.25 \$6 \$25 \$75 \$50,000 \$3 \$27.0 \$200,000 5,884,487 1.7 \$6 \$6 \$1.4 1.0	per shift cy in situ per 10 hour shift per area gal LS LS LS per ton :1 per ton per ton per ton per ton per ton per ton per ton (250 glass ton per day to sf feet per cy per ton tons per cy feet	,	Ogden Beeman Ogden Beeman pi Ogden Beeman pi pj pj pj Maxymillian Ole Ole Maxymillian Maxymillian Unit Cost Study- Minergy Ogden Beeman Ole
Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping Mobilization/Site Prep Area Sand Cap Depth Sand Placement Sand Purchase Sand Density Armored Cap Depth Cobbles	\$9,000 630 \$75,000 20 \$50,000 \$75,000 \$150,000 \$150,000 \$2 0.25 \$6 \$25 \$75 \$50,000 \$3 \$27.0 \$200,000 5,884,487 1.77 \$6 \$6 \$1.4 1.00 \$33	per shift cy in situ per 10 hour shift per area gal LS LS LS per ton :1 per ton per ton LS per ton ber ton per ton LS per ton sf feet per cy per ton tons per cy feet per cy	,	Ogden Beeman Ogden Beeman pj Ogden Beeman pj pj pj pj Maxymillian Ole Ole Maxymillian Maxymillian Unit Cost Study- Minergy Ogden Beeman Ogden Beeman Ole Means
Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping Mobilization/Site Prep Area Sand Cap Depth Sand Placement Sand Purchase Sand Density Armored Cap Depth Cobbles Cap Placement QA	\$9,000 630 \$75,000 20 \$50,000 \$75,000 \$150,000 \$150,000 \$2 0.25 \$6 \$25 \$75 \$50,000 \$3 \$27.0 \$200,000 5,884,487 1.7 \$6 \$6 \$6 1.4 1.0 \$30 \$100,000	per shift cy in situ per 10 hour shift per area gal LS LS LS per ton :1 per ton per ton per ton LS per ton per ton ton per ton per ton sf feet per cy per ton tons per cy feet per cy LS	,	Ogden Beeman Ogden Beeman pj Ogden Beeman pj Ogden Beeman pj pj pj Maxymillian Ole Ole Maxymillian Maxymillian Unit Cost Study- Minergy Ogden Beeman Ogden Beeman Ole Means Ogden Beeman
Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping Mobilization/Site Prep Area Sand Cap Depth Sand Placement Sand Purchase Sand Density Armored Cap Depth Cobbles	\$9,000 630 \$75,000 20 \$50,000 \$75,000 \$150,000 \$150,000 \$2 0.25 \$6 \$25 \$75 \$50,000 \$3 \$27.0 \$200,000 5,884,487 1.7 \$6 \$6 \$6 1.4 1.0 \$30 \$100,000	per shift cy in situ per 10 hour shift per area gal LS LS LS per ton :1 per ton per ton per ton per ton per ton per ton per ton (250 glass ton per day to sf feet per cy per ton tons per cy feet per cy LS of capital	,	Ogden Beeman Ogden Beeman pj Ogden Beeman pj pj pj pj Maxymillian Ole Ole Maxymillian Maxymillian Unit Cost Study- Minergy Ogden Beeman Ogden Beeman Ole Means

Nearshore CDF	Arrowhead		Menasha		
Land Lease or Purchase		per sf	\$1.8		Ole
Length	8,000		9,200		Baird
Capping Volume	190,000		170,000		Baird
Seeding Area	280,000		250,000		Baird
Sheetpile Wall Length	8,000		9,200		Baird
Sheetpile Depth	30		30		based on bathymetry
Sheetpile Cost		per sf	\$19		pj
Shot Rock Berm		per lf	\$550		Baird
Rip Rap		per lf	\$250		Baird
Place Treated Material		per cy	\$2		pj
Clean Soil Cap		per cy	\$10		Baird
Seeding		per sy	\$1		Baird
Mitigation		per acre	Ψ.		Tim
8		per year			Tim
Long-term Monitoring	\$650,000				Anne LTM
Long-term O&M		of capital			pj
Solidification	_,,				rj
Percent Lime	10%	(w/w)			Montgomery Watson
Lime		per ton	Mixing	\$25 per ton	pj, pug mill mixing
	***	P ** ***		721 PA 1011	r), r = 8
Dewatering - Upland Pond (2 cells)					
Land Lease or Purchase	\$1.80	per sf			Ole
Area	644,791				2 days slurry + 13 wk solids * 2 cell
Perimeter	3,212				assume square
Depth of Material in Dewatering Cell		feet			based on size at Arrowhead Park
Cell Retention Time		hours			Not Used
Cell Depth		feet			100 0000
Mobilization	\$20,000				рj
Clear and Grub		per acre			pj
Berm Volume		cy per lf			2:1 slope, 8-foot top
Berm Construction		per cy			pj
Rough Grading		per sf			рj
Alphalt Liner		per sf			pj, 2 2-inch lifts
Demob/Disposal	\$10,000				pj
Regrade Berm Soils		per cy			pj
Seed/Sod		per sy			Baird
Dewatering - Mechanical	φ1	per sy			Band
Mobilization Mobilization	\$100,000				ni
Holding Pond-Centrifuge		per bone dry ton			pj Global Dewatering
Holding Folia Continugo	\$60	per bone dry ton			Global Dewatering
Water Treatment					
Flow Rate (passive dewatering)	395	gpm			assume operate 24/7
Unit, Purchase (passive dewatering)	\$691,096				pj
Flow Rate (mechanical dewatering)		gpm			rj
Unit, Purchase (mechanical dewatering)	\$781,094				
Water Treatment (Including Operator)		per 1,000 gallons			рj
Water Treatment QA		per day			pj, 1 sample/day
		p ac amy			F35
Disposal					
Off-Site Disposal					
Load Soil for Hauling	\$2.80	per ton			рj
Round-trip Hauling	2	hours			pj
Round-trip Hauling (to Vitrification Facility)		hours			pj
Tipping Fee (non-TSCA)	\$43	per ton			St. Paul
Tipping Fee (TSCA)		per ton			St. Paul
Truck Rate		per hour			pj
Truck Load		tons			pj
Institutional Controls					
Public Education Program	\$100,000				рj
O&M Plans	\$20,000				pj
Deed Restrictions	\$5,000				pj
Annual Costs	,				10
Public Education Program	\$30,000				рj
Maintaining O&M Plans	\$800				pj
Reporting	\$20,000				pj
Long-term Monitoring	\$600,000				Anne LTM
	\$000,000				
Long-term Monitoring (no action)	\$300,000				Anne LTM

ALTERNATIVE A: No Action

Costs-R4.xls

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity	Units LS		Cost \$5,000
	rect Capital: gineering, Procurement & Construct	ion Management			\$5,000 600
To	tal Capital:				\$5,600
Present Worth of Long- Long-term Monitoring (no a	nger Term Operating Costs ction)		Years 40	Annual Cost \$300,000	\$4,513,889
Tot	tal Present Worth, Longer Term O&	M Costs			\$4,513,889
To	tal Project Capital and O&M Cost	t			\$4,500,000

ALTERNATIVE B: Monitored Natural Recovery

MONITORING/INSTITUTIONAL CONTROLS

Capital Items	Quantity	Units		Cost
Public Education Program	1	LS		\$100,000
O&M Plans	1	LS		\$20,000
Deed Restrictions	1	LS		\$5,000
Direct Capital:				\$125,000
Engineering, Procurement & Co	onstruction Managem	ent:		15,000
Total Capital:				\$140,000
Present Worth of Longer Term Operating Costs	s	Years	Annual Cost	
Long-term Monitoring		40	\$600,000	\$9,027,778
Public Education Program		40	\$30,000	\$451,389
Maintaining O&M Plans		40	\$800	\$12,037
Reporting		40	\$20,000	\$300,926
Total Present Worth, Longer To	erm O&M Costs			\$9,792,130
Total Project Capital and O&	M Cost			\$9,900,000

ALTERNATIVE C1: Dredge Sediment With Off-site Disposal (Passive Dewatering)

SEDIMENT REMOVAL (CUTTERHEAD)

Comital Manna	0	Units		Cost
Capital Items	Quantity			
Site Preparation	2	Each		\$200,000
Mobilization - Equipment and Silt Curtain	1	LS		\$170,000
Debris Sweep	526	acre		\$8,416,000
Dredging - 12 hour shifts	747	Day	5.746153846	\$4,257,900
Dredge Monitoring (Water Quality)	747	Day		\$2,241,000
Sediment Removal QA	747	Day		\$896,400
Site Restoration	2	Each		\$1,200,000
Direct Capital:				\$17,381,300
Engineering, Procurement & Co	nstruction Managem	ent:		2,085,756
Contractor Overhead/Profit:				2,607,195
Total Capital:				\$22,100,000

SEDIMENT DEWATERING (GRAVITY)

Capital Items	Quantity	Units	Cost
Land Lease or Purchase	644,791	sf	\$1,160,624
Mobilization	1	LS	\$20,000
Clear and Grub	644,791	sf	\$29,605
Berm Construction	33,309	cy	\$199,855
Rough Grading	644,791	sf	\$161,198
Liner Placement	644,791	sf	\$967,187
Demob/Disposal	1	LS	\$10,000
Regrade	33,309	cy	\$199,855
Seed/Sod	71,643	sy	\$71,643
Direct Capital:			\$2,819,968
Engineering, Procurement &	Construction Managem	ent:	338,396
Total Capital:			\$3,200,000
	WATER TR	REATMENT	
Unit Purchase	395	gpm	\$691,096
Water Treatment (Includes Operator)	594,575,928	gal	\$237,830
Water Treatment QA	1,046	day	\$209,200
Direct Capital:			\$1,138,126
Engineering, Procurement &	Construction Managem	ent:	136,575
Total Capital:			\$1,300,000

Capital Items	Quantity	Units	Cost
Solidification	935,530	ton	\$23,388,250
Lime Purchase	93,553	ton	\$5,613,180
Soil Loading	935,530	ton	\$2,619,484
Soil Hauling	935,530	ton	\$4,385,297
Tipping Fees (non-TSCA)	916,245	ton	\$39,398,531
Tipping Fees (TSCA)	19,285	ton	\$1,060,680
Direct Capital:			\$76,465,422
Engineering, Procure	ment & Construction Manager	nent:	9,175,851
Total Capital:			\$85,600,000

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Construc	tion Managem	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth of Long-term Monitoring	of Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term O&	kM Costs			\$4,513,889
	Total Project Capital and O&M Co	st			\$4,500,000
	TOTAL COST				\$116,700,000

ALTERNATIVE C2: Dredge Sediment With Off-site Disposal (Mechanical Dewatering)

SEDIMENT REMOVAL (CUTTERHEAD)

Capital Items	Quantity	Units		Cost
Site Preparation	2	Each		\$200,000
Mobilization - Equipment and Silt Curtain	1	LS		\$170,000
Debris Sweep	526	acre		\$8,416,000
Dredging - 12 hour shifts	747	Day	5.746153846	\$4,257,900
Dredge Monitoring (Water Quality)	747	Day		\$2,241,000
Sediment Removal QA	747	Day		\$896,400
Site Restoration	2	Each		\$1,200,000
Direct Capital:				\$17,381,300
Engineering, Procurement & Cor	nstruction Managem	ent:		2,085,756
Contractor Overhead/Profit:				2,607,195
Total Capital:				\$22,100,000

SEDIMENT DEWATERING (MECHANICAL)

Capital Items	Quantity	Units	Cost
Mobilization/Site Prep	1	LS	\$100,000
Dewatering	187,106	bdt	\$14,968,480
	Direct Capital:		\$15,068,480
	Engineering, Procurement & Construction Management	nent:	1,808,218
	Total Capital:		\$16,900,000

WATER TREATMENT

Capital Items	Quantity	Units	Cost
Unit Purchase	484	gpm	\$781,094
Water Treatment (Includes Operator)	729,148,320	gal	\$291,659
Water Treatment QA	1,046	day	\$209,200
Pi			61 201 052
Direct Capital:			\$1,281,953
Engineering, Procurement &	Construction Manageme	nt:	153,834

Total Capital: \$1,400,000

Capital Items	Quantity	Units	Cost
Soil Loading	374,212	ton	\$1,047,794
Soil Hauling	374,212	ton	\$1,754,119
Tipping Fees (non-TSCA)	366,498	ton	\$15,759,412
Tipping Fees (TSCA)	7,714	ton	\$424,272
Direct Capital:			\$18,985,597
Engineering, Procurement & Co	onstruction Managem	ent:	2,278,272
Total Capital:			\$21,300,000

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Construc	ction Manageme	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth of Long-term Monitoring	of Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term Oc	&M Costs			\$4,513,889
	Total Project Capital and O&M Co	st			\$4,500,000
	TOTAL COST				\$66,200,000

ALTERNATIVE D: Dredge Sediment, CDF and Off-site Disposal

SEDIMENT REMOVAL (MECHANICAL DREDGING)

Capital Items	Quantity	Units	Cost
Mobilization - Equipment and Silt Curtain	1	LS	\$490,000
Watertight Barges	4	ea	\$400,000
Offload Stockpile Area Prep.	1	LS	\$75,000
Dredging - 12 hour shifts	26	Day	\$234,000
Dredge Monitoring (Water Quality)	26	Day	\$78,000
Sediment Removal QA	26	Day	\$31,200
Offload Crane Mobilization	1	LS	\$50,000
Direct Capital:			\$1,358,200
Engineering, Procurement & Co	162,984		
Contractor Overhead/Profit:	203,730		
Total Capital:			\$1,700,000

SEDIMENT DISPOSAL (Existing NR 500 Commercial Disposal Facility)

Capital Items		Quantity	Units	Cost
Solidification		19,286	ton	\$482,150
Lime Purchase		1,929	ton	\$115,740
Soil Loading		19,286	ton	\$54,001
Soil Hauling		19,286	ton	\$90,403
Tipping Fees (TSCA)		19,286	ton	\$1,060,730
	Direct Capital:			\$1,803,024
Engineering, Procurement & Construction Management:			216,363	
	Total Capital:			\$2,000,000

SEDIMENT REMOVAL (10-INCH CUTTERHEAD)

Capital Items		Quantity	Units		Cost
Site Preparation		2	each		\$200,000
Mobilization - Equipme	nt and Silt Curtain	1	LS		\$170,000
Debris Sweep		526	acre		\$8,416,000
Dredging - 12 hour shift		732	Day		\$4,172,400
Dredge Monitoring (Wa	iter Quality)	732	Day		\$2,196,000
Sediment Removal QA		732	Day		\$878,400
Site Restoration		1	LS		\$600,000
	Direct Capital:				\$16,632,800
	Engineering, Procurement & Const	ruction Managem	ent:		1,995,936
	Contractor Overhead/Profit:				2,494,920
	Total Capital:				\$21,100,000
	CDF	CONSTRUC	TION - ARR	OWHEAD	
Capital Items		Quantity	Units		Cost
Land Lease or Purchase		2,520,000	sf		\$4,536,000
Shot Rock/Rip Rap		8,000	lf		\$6,920,000
Sheetpile Placement		240,000	sf		\$4,560,000
Clean Soil Cap		190,000	cy		\$1,900,000
Seeding		280,000	sy		\$280,000
Mitigation		58	acre		\$578,512
	Direct Conital:				\$19.774.512
	Direct Capital: Engineering, Procurement & Const	ruction Managem	ent.		\$18,774,512 2,252,941
	Engineering, Frocurement & Const	ruction Managem	ciit.		2,232,741
	Total Capital:				\$21,027,454
Prosent Worth o	f Longer Term Operating Costs		Years	Annual Cost	
Mitigation	Longer Term Operating Costs		40	10,000	\$150,463
Long-term Monitoring			40	650,000	\$9,780,093
Long-term O&M			40	420,549	\$6,327,706
Ü	Total Present Worth, Longer Term	O&M Costs			\$16,258,262
	Total Project Capital and O&M				\$37,300,000
	Total Project Capital and Occident	Cost			337,300,000
		WATER	TREATMEN	VT	
Capital Items		Quantity	Units		Cost
Unit Purchase		484	gpm		\$781,094
Water Treatment (Inclu-	des Operator)	714,444,075	gal		\$285,778
Water Treatment QA		1,046	day		\$209,200
	Direct Capital:				\$1,276,072
	Engineering, Procurement & Const	ruction Managem	ent·		153,129
	8 8,				
	Total Capital:				\$1,400,000
		INSTITUTIO	NAL CONT	ROLS	
Capital Items		Quantity	Units		Cost
Deed Restrictions		Quantity 1	LS		\$5,000
Deed Reguletions		•	23		\$2,000
	Direct Capital:				\$5,000
Engineering, Procurement & Construction Management:					600
	Total Capital:				\$5,600
	-				,000
	f Longer Term Operating Costs		Years	Annual Cost	£4.512.000
Long-term Monitoring (no action)		40	\$300,000	\$4,513,889
	Total Present Worth, Longer Term	O&M Costs			\$4,513,889
Total Costs					,,- 0/
	\$4,500,000				
	TOTAL COST				\$68,000,000

ALTERNATIVE E: Dredge Sediment and Thermal Treatment

Debris Sweep Dredging - 12 hour shift	ts	526 747	acre Day		\$8,416,000 \$4,257,900
Dredge Monitoring (W		747	Day		\$2,241,000
Sediment Removal QA		747	Day		\$896,400
Site Restoration		2	Each		\$1,200,000
	Direct Capital:				\$17,381,300
	Engineering, Procurement & Const Contractor Overhead/Profit:	truction Managem	ent:		2,085,756 2,607,195
	Total Capital:				\$22,100,000
	SEDIM	IENT DEWAT	ERING (GR	RAVITY)	
Capital Items		Quantity	Units		Cost
Land Lease or Purchase	;	644,791	sf		\$1,160,624
Mobilization		1	LS		\$20,000
Clear and Grub		644,791	sf		\$29,605
Berm Construction Rough Grading		33,309 644,791	cy sf		\$199,855 \$161,198
Liner Placement		644,791	sf		\$967,187
Demob/Disposal		1	LS		\$10,000
Regrade		33,309	cy		\$199,855
Seed/Sod		71,643	sy		\$71,643
	Direct Capital:				\$2,819,968
	Engineering, Procurement & Const	truction Manageme	ent.		338,396
	Total Capital:				\$3,200,000
		WATER TR	EATMENT		
Capital Items		Quantity	Units		Cost
Unit Purchase	d ()t)	395	gpm		\$691,096
Water Treatment (Inclu Water Treatment QA	des Operator)	594,575,928 1,046	gal day		\$237,830 \$209,200
water Treatment QA		1,040	uay		\$209,200
	Direct Capital:				\$1,138,126
	Engineering, Procurement & Const	truction Manageme	ent:		136,575
	Total Capital:				\$1,300,000
		(VITRIFICA	ΓΙΟΝ 1x250	tons Integrated Storage Unit)	
Canital Items		Quantity	Units		Cost
Capital Items Sediment Treatment		Quantity 935 530	Units ton		Cost \$25,259,310
Sediment Treatment		935,530	Units ton ton		\$25,259,310
		- •	ton		
Sediment Treatment Soil Loading	Direct Capital:	935,530 935,530 935,530	ton ton ton		\$25,259,310 \$2,619,484 \$1,096,324 \$28,975,118
Sediment Treatment Soil Loading		935,530 935,530 935,530	ton ton ton		\$25,259,310 \$2,619,484 \$1,096,324 \$28,975,118
Sediment Treatment Soil Loading	Direct Capital:	935,530 935,530 935,530	ton ton ton		\$25,259,310 \$2,619,484 \$1,096,324 \$28,975,118
Sediment Treatment Soil Loading	Direct Capital: Engineering, Procurement & Const Total Capital:	935,530 935,530 935,530	ton ton ton	DLS	\$25,259,310 \$2,619,484 \$1,096,324 \$28,975,118 \$3,477,014
Sediment Treatment Soil Loading	Direct Capital: Engineering, Procurement & Const Total Capital:	935,530 935,530 935,530 935,530 truction Management	ton ton ton	DLS	\$25,259,310 \$2,619,484 \$1,096,324 \$28,975,118 \$3,477,014
Sediment Treatment Soil Loading Soil Hauling	Direct Capital: Engineering, Procurement & Const Total Capital:	935,530 935,530 935,530 935,530 truction Management	ton ton ton ent:	DLS	\$25,259,310 \$2,619,484 \$1,096,324 \$28,975,118 \$3,477,014
Sediment Treatment Soil Loading Soil Hauling	Direct Capital: Engineering, Procurement & Const Total Capital:	935,530 935,530 935,530 struction Managements	ton ton ton ent: AL CONTRO Units	DLS	\$25,259,310 \$2,619,484 \$1,096,324 \$28,975,118 \$3,477,014 \$32,500,000
Sediment Treatment Soil Loading Soil Hauling	Direct Capital: Engineering, Procurement & Const Total Capital:	935,530 935,530 935,530 struction Management ASTITUTION A Quantity 1	ton ton ton ent: **AL CONTRO Units LS	DLS	\$25,259,310 \$2,619,484 \$1,096,324 \$28,975,118 \$3,477,014 \$32,500,000 Cost \$5,000
Sediment Treatment Soil Loading Soil Hauling	Direct Capital: Engineering, Procurement & Const Total Capital: IN Direct Capital:	935,530 935,530 935,530 struction Management ASTITUTION A Quantity 1	ton ton ton ent: **AL CONTRO Units LS	DLS	\$25,259,310 \$2,619,484 \$1,096,324 \$28,975,118 \$3,477,014 \$32,500,000 Cost \$5,000
Sediment Treatment Soil Loading Soil Hauling Capital Items Deed Restrictions	Direct Capital: Engineering, Procurement & Const Total Capital: IN Direct Capital: Engineering, Procurement & Const Total Capital:	935,530 935,530 935,530 struction Management ASTITUTION A Quantity 1	ton ton ton ton ent: AL CONTRO Units LS ent:		\$25,259,310 \$2,619,484 \$1,096,324 \$28,975,118 \$3,477,014 \$32,500,000 Cost \$5,000 \$5,000 600
Sediment Treatment Soil Loading Soil Hauling Capital Items Deed Restrictions	Direct Capital: Engineering, Procurement & Const Total Capital: Direct Capital: Engineering, Procurement & Const Total Capital:	935,530 935,530 935,530 struction Management ASTITUTION A Quantity 1	ton ton ton ent: **AL CONTRO Units LS	Annual Cost \$300,000	\$25,259,310 \$2,619,484 \$1,096,324 \$28,975,118 \$3,477,014 \$32,500,000 Cost \$5,000 \$5,000 \$5,600
Sediment Treatment Soil Loading Soil Hauling Capital Items Deed Restrictions Present Worth of	Direct Capital: Engineering, Procurement & Const Total Capital: Direct Capital: Engineering, Procurement & Const Total Capital:	935,530 935,530 935,530 struction Management SSTITUTIONA Quantity 1	ton ton ton ton ent: AL CONTRO Units LS ent: Years	Annual Cost	\$25,259,310 \$2,619,484 \$1,096,324 \$28,975,118 \$3,477,014 \$32,500,000 Cost \$5,000 \$5,000 \$5,600
Sediment Treatment Soil Loading Soil Hauling Capital Items Deed Restrictions Present Worth of	Direct Capital: Engineering, Procurement & Const Total Capital: IN Direct Capital: Engineering, Procurement & Const Total Capital: of Longer Term Operating Costs (no action)	935,530 935,530 935,530 struction Managements STITUTION A Quantity 1 truction Managements	ton ton ton ton ent: AL CONTRO Units LS ent: Years	Annual Cost	\$25,259,310 \$2,619,484 \$1,096,324 \$28,975,118 \$3,477,014 \$32,500,000 \$5,000 \$5,000 \$5,600 \$4,513,889
Sediment Treatment Soil Loading Soil Hauling Capital Items Deed Restrictions Present Worth of	Direct Capital: Engineering, Procurement & Const Total Capital: Direct Capital: Engineering, Procurement & Const Total Capital: of Longer Term Operating Costs (no action) Total Present Worth, Longer Term	935,530 935,530 935,530 struction Managements STITUTION A Quantity 1 truction Managements	ton ton ton ton ent: AL CONTRO Units LS ent: Years	Annual Cost	\$25,259,310 \$2,619,484 \$1,096,324 \$28,975,118 \$33,477,014 \$32,500,000 \$5,000 \$5,000 \$5,600 \$4,513,889
Sediment Treatment Soil Loading Soil Hauling Capital Items Deed Restrictions Present Worth of	Direct Capital: Engineering, Procurement & Const Total Capital: Direct Capital: Engineering, Procurement & Const Total Capital: of Longer Term Operating Costs (no action) Total Present Worth, Longer Term	935,530 935,530 935,530 struction Managements STITUTION A Quantity 1 truction Managements	ton ton ton ton ent: AL CONTRO Units LS ent: Years	Annual Cost	\$25,259,310 \$2,619,484 \$1,096,324 \$28,975,118 \$33,477,014 \$32,500,000 \$5,000 \$5,000 \$5,600 \$4,513,889

ALTERNATIVE F: Cap Sediment to Maximum Extent Possible, Dredge to CDF and Off-site Disposal

SEDIMENT REMOVAL (MECHANICAL DREDGING)

	SEDIMENT	KENO VIL	(MECHALIA)	CAL DREDGING)	
Capital Items		Quantity	Units		Cost
Mobilization - Equipm	ent and Silt Curtain	1	LS		\$490,000
Watertight Barges		4	ea		\$400,000
Offload Stockpile Area Dredging - 12 hour shi		1 26	LS Day		\$75,000 \$234,000
Dredge Monitoring (W		26	Day		\$234,000 \$78,000
Sediment Removal QA		26	Day		\$31,200
Offload Crane Mobiliz		1	LS		\$50,000
	Direct Capital:				\$1,358,200
	Engineering, Procurement & Constr	ruction Managem	ient:		162,984
	Contractor Overhead/Profit:				203,730
	Total Capital:				\$1,700,000
	SEDIMENT DISPOSA	L (Existing N	R 500 Comm	nercial Disposal Facility)	
Capital Items		Quantity	Units		Cost
Solidification		19,286	ton		\$482,150
Cement Purchase		1,929	ton		\$115,740
Soil Loading		19,286	ton		\$54,001
Soil Hauling		19,286	ton		\$90,403
Tipping Fees (TSCA)		19,286	ton		\$1,060,730
	Direct Capital:				\$1,803,024
	Engineering, Procurement & Constr	ruction Managem	nent:		216,363
	Total Capital:				\$2,000,000
		CA	APPING		
Capital Items		Quantity	Units		Cost
Mobilization/Site Prep Sand Purchase		1 508,536	LS		\$200,000
Sand Placement		363,240	tons cy		\$3,051,215 \$2,179,440
Cobble Purchase and P	lacement	217,944	cy		\$6,538,319
Cap Placement QA		1	LS		\$100,000
	Direct Capital:				\$12,068,973
	Engineering, Procurement & Consti	ruction Managem	nent:		1,448,277
	Total Capital:				\$13,517,250
Present Worth of Monitoring/O&M	of Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring			40	\$400,000	\$6,018,519
Long-term O&M			40	\$270,345	\$4,067,691
	Total Present Worth, Longer Term	O&M Costs			\$10,086,210
	Total Project Capital and O&M (Cost			\$23,600,000
	SEDIMENT	REMOVAL (10-INCH CU	JTTERHEAD)	
Capital Items		Quantity	Units		Cost
Site Preparation		2	Each		\$200,000
Mobilization - Equipm	ent and Silt Curtain	1	LS		\$170,000
Debris Sweep Dredging - 12 hour shi	α	526	acre		\$8,416,000
Dredge Monitoring (W		590 590	Day Day		\$3,363,000 \$1,770,000
Sediment Removal QA	~ 2/	590	Day		\$708,000
Site Restoration		2	Each		\$1,200,000
	Direct Capital:				\$15,827,000
	Engineering, Procurement & Consti	ruction Managem	ient:		1,899,240
	Contractor Overhead/Profit:	5-			2,374,050
	Total Capital:				\$20,100,000
	-				* ****

WATER TREATMENT

Capital Items Unit Purchase Water Treatment (Inclu Water Treatment QA	des Operator)	Quantity 484 576,232,088 848	Units gpm gal Day		Cost \$781,094 \$230,493 \$169,600
	Direct Capital: Engineering, Procurement & Const	ruction Manageme	ent:		\$1,181,187 141,742
	Total Capital:				\$1,300,000
	CDF	CONSTRUCT	TION - ARR	OWHEAD	
Capital Items Land Lease or Purchase Shot Rock/Rip Rap Sheetpile Placement Clean Soil Cap Seeding Mitigation	Direct Capital: Engineering, Procurement & Const	Quantity 2,520,000 8,000 240,000 190,000 280,000 58	Units sf If sf cy sy acre		Cost \$4,536,000 \$6,920,000 \$4,560,000 \$1,900,000 \$280,000 \$578,512 \$18,774,512 2,252,941
	Total Capital:				\$21,027,454
Present Worth of Mitigation Long-term Monitoring Long-term O&M	f Longer Term Operating Costs Total Present Worth, Longer Term Total Project Capital and O&M		Years 40 40 40 40	Annual Cost 10,000 650,000 420,549	\$150,463 \$9,780,093 \$6,327,706 \$16,258,262 \$37,300,000
		INSTITUTIO	NAL CONT	ROLS	
Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Const	ruction Manageme	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth o	f Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term	O&M Costs			\$4,513,889
	Total Project Capital and O&M	Cost			\$4,500,000
	TOTAL COST				\$90,500,000

BASIS FOR PRELIMINARY COST ESTIMATES

SEDIMENT REMEDIATION

FOX RIVER, WISCONSIN

LITTLE LAKE BUTTE DES MORTS

4 . 4	T1	F 000	1.
Action	Levei -	. 5.000	DDD

Material Handling Assumptions:				
Volume > 5000 ppb	281,689	cy 174 ac	215,030 m3	Acres corresponds to dredge
Volume > 125 ppb	1,689,173	-	1,289,445 m3	footprint area
Volume > 250 ppb	1,322,818	cy	1,009,785 m3	-
Volume > 500 ppb	1,128,565	cy	781,390 m3	
Volume > 1,000 ppb	784,192	cy	598,620 m3	
Volume > 50,000 ppb	16,165	cy	12,340 m3	
Solids Specific Gravity	2.51			
Fresh Water Density		lb/ft3		
In Situ Density	24.2%		0.99 tons per cy	
Slurry Density (20% in situ)	5.5%		0.87 tons per cy	Ogden Beeman
Dewatered Density (passive pond)		w/w 9.1% v/v	0.96 tons per cy	Montgomery Watson
Dewatered Density (mechanical and CDF)		w/w 28.5% v/v	1.20 tons per cy	Foth & VanDyke
Treated Density	93.8%		1.35 tons per cy	
Arrowhead/Menasha CDF Capacity HTTD Treatment Capacity	1,406,932 1,099,327		1,337,963 m3 1,650,000 tons	
Cap Volume	59,055		45,080 m3	
Vitrification Treatment Capacity	4,496,073	•	2145500.00 tons	
Viamenton Treatment Capacity	4,470,075	cy in situ	21-13300.00 tons	
Cost Estimating Parameters & Methodology:				
Interest Rate	6.0%			Not Used
Sales Tax	5.5%			
Engineering, Procurement and Construction Mgmt	12.0%			
Contractor Overhead and Profit - Dredging Only	15.0%	1		
Dredging Debris Sweep	\$16,000	per acre		Ogden Beeman
Dredge Monitoring (Water Quality)		per day		Ogden Beeman
Sediment Removal QA		per day		
Hydraulic - 10-inch Cutterhead	\$1,200	per day		
Site Preparation	\$100,000	per dredge launch site		рј
Mobilization - Equipment		per dredge		Ogden Beeman
Mobilization - Silt Curtain	\$35,000	per areage		Ogden Beeman
Shift Rate (10 hours)		per shift		Ogden Beeman
Dredge Rate	1050	cy in situ per 10 hour shift		Ogden Beeman
Site Restoration		per dredge launch site		рj
Mechanical - 3 cy bucket		•		
Dock Construction	\$400,000	LS		pj
Mobilization - Equipment		per dredge		Ogden Beeman
Mobilization - Silt Curtain	\$455,000 \$35,000	LS		
Mobilization - Silt Curtain Mobilization - Watertight Barge	\$455,000 \$35,000 \$100,000	LS ea		Ogden Beeman Ogden Beeman Ogden Beeman - JAG estimate
Mobilization - Silt Curtain Mobilization - Watertight Barge Shift Rate (10 hours)	\$455,000 \$35,000 \$100,000 \$9,000	LS ea per shift		Ogden Beeman Ogden Beeman Ogden Beeman - JAG estimate Ogden Beeman
Mobilization - Silt Curtain Mobilization - Watertight Barge Shift Rate (10 hours) Dredge Rate	\$455,000 \$35,000 \$100,000 \$9,000 630	LS ea per shift cy in situ per 10 hour shift		Ogden Beeman Ogden Beeman Ogden Beeman - JAG estimate Ogden Beeman Ogden Beeman
Mobilization - Silt Curtain Mobilization - Watertight Barge Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep.	\$455,000 \$35,000 \$100,000 \$9,000 630 \$75,000	LS ea per shift cy in situ per 10 hour shift per area		Ogden Beeman Ogden Beeman Ogden Beeman - JAG estimate Ogden Beeman Ogden Beeman Pj
Mobilization - Silt Curtain Mobilization - Watertight Barge Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%)	\$455,000 \$35,000 \$100,000 \$9,000 630 \$75,000	LS ea per shift cy in situ per 10 hour shift per area gal		Ogden Beeman Ogden Beeman Ogden Beeman - JAG estimate Ogden Beeman Ogden Beeman Pj Ogden Beeman
Mobilization - Silt Curtain Mobilization - Watertight Barge Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization	\$455,000 \$35,000 \$100,000 \$9,000 630 \$75,000 20	LS ea per shift cy in situ per 10 hour shift per area gal LS		Ogden Beeman Ogden Beeman Ogden Beeman - JAG estimate Ogden Beeman Ogden Beeman pj Ogden Beeman pj
Mobilization - Silt Curtain Mobilization - Watertight Barge Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration	\$455,000 \$35,000 \$100,000 \$9,000 630 \$75,000	LS ea per shift cy in situ per 10 hour shift per area gal LS		Ogden Beeman Ogden Beeman Ogden Beeman - JAG estimate Ogden Beeman Ogden Beeman Pj Ogden Beeman
Mobilization - Silt Curtain Mobilization - Watertight Barge Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption	\$455,000 \$35,000 \$100,000 \$9,000 630 \$75,000 20 \$50,000 \$75,000	LS ea per shift cy in situ per 10 hour shift per area gal LS		Ogden Beeman Ogden Beeman Ogden Beeman - JAG estimate Ogden Beeman Ogden Beeman Pj Ogden Beeman Pj pj pj
Mobilization - Silt Curtain Mobilization - Watertight Barge Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area	\$455,000 \$35,000 \$100,000 \$9,000 630 \$75,000 20 \$50,000 \$75,000	LS ea per shift cy in situ per 10 hour shift per area gal LS		Ogden Beeman Ogden Beeman Ogden Beeman - JAG estimate Ogden Beeman Ogden Beeman Pj Ogden Beeman Pj pj pj
Mobilization - Silt Curtain Mobilization - Watertight Barge Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep	\$455,000 \$35,000 \$100,000 \$9,000 630 \$75,000 20 \$50,000 \$75,000	LS ea per shift cy in situ per 10 hour shift per area gal LS LS		Ogden Beeman Ogden Beeman Ogden Beeman - JAG estimate Ogden Beeman Ogden Beeman Pj Ogden Beeman Pj pj pj
Mobilization - Silt Curtain Mobilization - Watertight Barge Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA	\$455,000 \$35,000 \$100,000 \$9,000 630 \$75,000 20 \$50,000 \$75,000 \$50,000 \$150,000	LS ea per shift cy in situ per 10 hour shift per area gal LS LS		Ogden Beeman Ogden Beeman Ogden Beeman - JAG estimate Ogden Beeman Ogden Beeman Pj Ogden Beeman Pj pj pj
Mobilization - Silt Curtain Mobilization - Watertight Barge Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol.	\$455,000 \$35,000 \$100,000 \$9,000 630 \$75,000 20 \$50,000 \$75,000 \$150,000 \$2 0.25	LS ea per shift cy in situ per 10 hour shift per area gal LS LS LS per ton :1		Ogden Beeman Ogden Beeman Ogden Beeman Ogden Beeman Ogden Beeman Ogden Beeman pj Ogden Beeman pj pj pj
Mobilization - Silt Curtain Mobilization - Watertight Barge Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver	\$455,000 \$35,000 \$100,000 \$9,000 20 \$50,000 \$75,000 \$50,000 \$150,000 \$2 0.25 \$6	LS ea per shift cy in situ per 10 hour shift per area gal LS LS per ton :1 per ton		Ogden Beeman Ogden Beeman Ogden Beeman - JAG estimate Ogden Beeman Ogden Beeman Pj Ogden Beeman Pj pj pj
Mobilization - Silt Curtain Mobilization - Watertight Barge Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending	\$455,000 \$35,000 \$100,000 \$9,000 20 \$50,000 \$75,000 \$50,000 \$150,000 \$2 0.25 \$6 \$25	LS ea per shift cy in situ per 10 hour shift per area gal LS LS Per ton :1 per ton per ton		Ogden Beeman Ogden Beeman Ogden Beeman - JAG estimate Ogden Beeman Ogden Beeman pj Ogden Beeman pj pj Ogden Beeman pj pj
Mobilization - Silt Curtain Mobilization - Watertight Barge Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver	\$455,000 \$35,000 \$100,000 \$9,000 20 \$50,000 \$75,000 \$50,000 \$150,000 \$2 0.25 \$6 \$25	LS ea per shift cy in situ per 10 hour shift per area gal LS LS per ton :1 per ton per ton per ton per ton		Ogden Beeman Ogden Beeman Ogden Beeman - JAG estimate Ogden Beeman Ogden Beeman pj Ogden Beeman pj pj pj Maxymillian Ole Ole
Mobilization - Silt Curtain Mobilization - Watertight Barge Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment)	\$455,000 \$35,000 \$100,000 \$9,000 630 \$75,000 \$50,000 \$150,000 \$2 0.25 \$6 \$25 \$75,000	LS ea per shift cy in situ per 10 hour shift per area gal LS LS per ton :1 per ton per ton per ton per ton LS		Ogden Beeman Ogden Beeman Ogden Beeman - JAG estimate Ogden Beeman Ogden Beeman pi Ogden Beeman pj pj pj Maxymillian Ole Ole Maxymillian
Mobilization - Silt Curtain Mobilization - Watertight Barge Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing	\$455,000 \$35,000 \$100,000 \$9,000 630 \$75,000 \$50,000 \$150,000 \$2 0.25 \$6 \$25 \$75,000	LS ea per shift cy in situ per 10 hour shift per area gal LS LS per ton :1 per ton per ton per ton per ton		Ogden Beeman Ogden Beeman Ogden Beeman - JAG estimate Ogden Beeman Ogden Beeman pi Ogden Beeman pj pj pj Maxymillian Ole Ole Maxymillian
Mobilization - Silt Curtain Mobilization - Watertight Barge Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs)	\$455,000 \$35,000 \$100,000 \$9,000 20 \$50,000 \$75,000 \$50,000 \$150,000 \$2 0.25 \$6 \$25 \$75 \$50,000	LS ea per shift cy in situ per 10 hour shift per area gal LS LS per ton :1 per ton per ton per ton per ton LS	elter unit)	Ogden Beeman Ogden Beeman Ogden Beeman - JAG estimate Ogden Beeman Ogden Beeman pi Ogden Beeman pj pj pj Maxymillian Ole Ole Maxymillian
Mobilization - Silt Curtain Mobilization - Watertight Barge Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping	\$455,000 \$35,000 \$100,000 \$9,000 630 \$75,000 \$75,000 \$150,000 \$150,000 \$2 0.25 \$6 \$25 \$75 \$50,000	LS ea per shift cy in situ per 10 hour shift per area gal LS LS per ton :1 per ton per ton per ton LS per ton	elter unit)	Ogden Beeman Ogden Beeman Ogden Beeman Ogden Beeman Ogden Beeman Pj Ogden Beeman Pj Pj Pj Maxymillian Ole Ole Maxymillian Maxymillian Unit Cost Study- Minergy
Mobilization - Silt Curtain Mobilization - Watertight Barge Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping Mobilization/Site Prep	\$455,000 \$35,000 \$100,000 \$9,000 20 \$50,000 \$75,000 \$150,000 \$150,000 \$2 0.25 \$6 \$25 \$75 \$50,000 \$3	LS ea per shift cy in situ per 10 hour shift per area gal LS LS per ton :1 per ton	_	Ogden Beeman Ogden Beeman Ogden Beeman Ogden Beeman Ogden Beeman pj Ogden Beeman pj Ogden Beeman pj pj Maxymillian Ole Ole Maxymillian Maxymillian
Mobilization - Silt Curtain Mobilization - Watertight Barge Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping Mobilization/Site Prep Area	\$455,000 \$35,000 \$100,000 \$9,000 20 \$50,000 \$75,000 \$50,000 \$150,000 \$2 0.25 \$6 \$25 \$75 \$50,000 \$33	LS ea per shift cy in situ per 10 hour shift per area gal LS LS Per ton :1 per ton per ton per ton LS per ton per ton per ton per ton per ton situ per 10 hour shift per area gal LS LS 1 hour shift per area gal LS LS 1 hour shift per ton (250 glass ton per day m	,	Ogden Beeman Ogden Beeman Ogden Beeman Ogden Beeman Ogden Beeman Pj Ogden Beeman Pj Pj Pj Maxymillian Ole Ole Maxymillian Maxymillian Unit Cost Study- Minergy
Mobilization - Silt Curtain Mobilization - Watertight Barge Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping Mobilization/Site Prep Area Sand Cap Depth	\$455,000 \$35,000 \$100,000 \$9,000 630 \$75,000 20 \$50,000 \$150,000 \$150,000 \$2 0.25 \$6 \$25 \$75 \$50,000 \$3 \$27.0	LS ea per shift cy in situ per 10 hour shift per area gal LS LS per ton :1 per ton si per ton	_	Ogden Beeman Ogden Beeman Ogden Beeman Ogden Beeman Ogden Beeman Ogden Beeman Pj Ogden Beeman Pj Pj Maxymillian Ole Ole Maxymillian Maxymillian Unit Cost Study- Minergy Ogden Beeman
Mobilization - Silt Curtain Mobilization - Watertight Barge Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping Mobilization/Site Prep Area Sand Cap Depth Sand Placement	\$455,000 \$35,000 \$100,000 \$9,000 630 \$75,000 \$50,000 \$150,000 \$150,000 \$2 0.25 \$6 \$25 \$75,\$ \$50,000 \$3 \$27.0	LS ea per shift cy in situ per 10 hour shift per area gal LS LS Per ton :1 per ton per ton per ton LS per ton per ton per ton sf feet per cy	_	Ogden Beeman Ogden Beeman Ogden Beeman Ogden Beeman Ogden Beeman Ogden Beeman Pj Ogden Beeman Pj Pj Maxymillian Ole Ole Maxymillian Unit Cost Study- Minergy Ogden Beeman Ogden Beeman
Mobilization - Silt Curtain Mobilization - Watertight Barge Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping Mobilization/Site Prep Area Sand Cap Depth Sand Placement Sand Placement Sand Purchase	\$455,000 \$35,000 \$100,000 \$9,000 20 \$50,000 \$75,000 \$550,000 \$150,000 \$150,000 \$2 0.25 \$6 \$25 \$75 \$50,000 \$3 \$27.0 \$200,000 1,791,071 1.7 \$66 \$6	LS ea per shift cy in situ per 10 hour shift per area gal LS LS per ton :1 per ton (250 glass ton per day m sf feet per cy per ton	_	Ogden Beeman Ogden Beeman Ogden Beeman Ogden Beeman Ogden Beeman Ogden Beeman Pj Ogden Beeman Pj Pj Maxymillian Ole Ole Maxymillian Maxymillian Unit Cost Study- Minergy Ogden Beeman
Mobilization - Silt Curtain Mobilization - Watertight Barge Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping Mobilization/Site Prep Area Sand Cap Depth Sand Placement Sand Purchase Sand Density	\$455,000 \$35,000 \$100,000 \$9,000 20 \$50,000 \$75,000 \$50,000 \$150,000 \$2 0.25 \$6 \$25 \$75 \$50,000 \$3 \$27.0 \$200,000 1,791,071 1.7 \$6 \$6	LS ea per shift cy in situ per 10 hour shift per area gal LS LS Per ton :1 per ton per ton LS per ton per ton per ton sf per ton (250 glass ton per day m sf per cy per cy per ton tons per cy	_	Ogden Beeman Ogden Beeman Ogden Beeman Ogden Beeman Ogden Beeman Ogden Beeman Pj Ogden Beeman Pj Pj Maxymillian Ole Ole Maxymillian Unit Cost Study- Minergy Ogden Beeman Ogden Beeman
Mobilization - Silt Curtain Mobilization - Watertight Barge Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping Mobilization/Site Prep Area Sand Cap Depth Sand Placement Sand Placement Sand Purchase	\$455,000 \$35,000 \$100,000 \$9,000 630 \$75,000 20 \$50,000 \$150,000 \$150,000 \$2 0.25 \$6 \$25 \$75 \$50,000 \$33 \$27.0 \$200,000 \$1,791,071 \$6 \$6 \$14 \$1.0	LS ea per shift cy in situ per 10 hour shift per area gal LS LS per ton :1 per ton (250 glass ton per day m sf feet per cy per ton	_	Ogden Beeman Ogden Beeman Ogden Beeman Ogden Beeman Ogden Beeman Ogden Beeman Pj Ogden Beeman Pj Pj Maxymillian Ole Ole Maxymillian Unit Cost Study- Minergy Ogden Beeman Ogden Beeman
Mobilization - Silt Curtain Mobilization - Watertight Barge Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping Mobilization/Site Prep Area Sand Cap Depth Sand Placement Sand Purchase Sand Density Armored Cap Depth Cobbles Cap Placement QA	\$455,000 \$35,000 \$100,000 \$9,000 20 \$50,000 \$150,000 \$150,000 \$2 0.25 \$6 \$25 \$75 \$50,000 \$33 \$27.0 \$200,000 1,791,071 1.7 \$6 \$6 \$6 \$1.4 1.0 \$30 \$100,000	LS ea per shift cy in situ per 10 hour shift per area gal LS LS Per ton :1 per ton per ton ES per ton tons per cy feet per cy LS	_	Ogden Beeman Ogden Beeman Ogden Beeman Ogden Beeman Ogden Beeman Ogden Beeman Pj Ogden Beeman Pj Pj Maxymillian Ole Ole Maxymillian Maxymillian Unit Cost Study- Minergy Ogden Beeman Ogden Beeman Ogden Beeman
Mobilization - Silt Curtain Mobilization - Watertight Barge Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping Mobilization/Site Prep Area Sand Cap Depth Sand Placement Sand Purchase Sand Density Armored Cap Depth Cobbles Cap Placement QA Long-term O&M	\$455,000 \$35,000 \$100,000 \$9,000 20 \$50,000 \$150,000 \$150,000 \$2 0.25 \$6 \$25 \$75 \$50,000 \$33 \$27.0 \$200,000 1,791,071 1.7 \$6 \$6 1.4 1.0 \$30 \$100,000 2%	LS ea per shift cy in situ per 10 hour shift per area gal LS LS Per ton :1 per ton per ton per ton per ton per ton per ton sf per ton (250 glass ton per day m sf per cy per ton tons per cy feet	_	Ogden Beeman Ogden Beeman Ogden Beeman Ogden Beeman Ogden Beeman Ogden Beeman pj Ogden Beeman pj pj Maxymillian Unit Cost Study- Minergy Ogden Beeman Ogden Beeman Ole Maxymillian Unit Cost Study- Minergy
Mobilization - Silt Curtain Mobilization - Watertight Barge Shift Rate (10 hours) Dredge Rate Offload Stockpile Area Prep. Free Water per cy Dredged (10%) Offload Crane Mobilization Site Restoration High Temperature Thermal Desorption Setup Staging Area Mobilization/Site Prep Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver Blending HTTD (includes off-gas treatment) Stack Testing Place Treated Material Vitrification Vitrification (unit cost incl Cap and Op Costs) Capping Mobilization/Site Prep Area Sand Cap Depth Sand Placement Sand Purchase Sand Density Armored Cap Depth Cobbles Cap Placement QA	\$455,000 \$35,000 \$100,000 \$9,000 20 \$50,000 \$150,000 \$150,000 \$2 0.25 \$6 \$25 \$75 \$50,000 \$33 \$27.0 \$200,000 1,791,071 1.7 \$6 \$6 \$6 \$1.4 1.0 \$30 \$100,000	LS ea per shift cy in situ per 10 hour shift per area gal LS LS Per ton :1 per ton per ton per ton per ton per ton per ton sf per ton (250 glass ton per day m sf per cy per ton tons per cy feet	_	Ogden Beeman Ogden Beeman Ogden Beeman Ogden Beeman Ogden Beeman Ogden Beeman pj Ogden Beeman pj pj Maxymillian Ole Ole Maxymillian Unit Cost Study- Minergy Ogden Beeman Ogden Beeman Ole Means Ogden Beeman

Nearshore CDF	Arrowhead		Menasha			
Land Lease or Purchase		per sf	\$1.8			Ole
Length	8,000		9,200			Baird
Capping Volume	190,000	cy	170,000			Baird
Seeding Area	280,000	sy	250,000			Baird
Sheetpile Wall Length	8,000	lf	9,200			Baird
Sheetpile Depth	30	ft	30			based on bathymetry
Sheetpile Cost	\$19	per sf	\$19			pj
Shot Rock Berm		per lf	\$550			Baird
Rip Rap		per lf	\$250			Baird
Place Treated Material		per cy	\$250			
			\$10			pj Baird
Clean Soil Cap		per cy				
Seeding		per sy	\$1			Baird
Mitigation	\$10,000					Tim
	\$10,000					Tim
Long-term Monitoring	\$650,000					Anne LTM
Long-term O&M	2%	of capital				pj
Solidification						
Percent Lime	10%	(w/w)				Montgomery Watson
Lime	\$60	per ton	Mixing	\$25 per	r ton	pj, pug mill mixing
				•		
Dewatering - Upland Pond (2 cells)						
Land Lease or Purchase	\$1.80	per sf				Ole
Area	644,791					2 days slurry + 13 wk solids * 2 cell
Perimeter	3,212					assume square
		feet				based on size at Arrowhead Park
Depth of Material in Dewatering Cell Cell Retention Time		hours				
						Not Used
Cell Depth		feet				
Mobilization	\$20,000					pj
Clear and Grub	\$2,000	per acre				pj
Berm Volume	10.4	cy per lf				2:1 slope, 8-foot top
Berm Construction	\$6	per cy				pj
Rough Grading	\$0.25	per sf				pj
Alphalt Liner		per sf				pj, 2 2-inch lifts
Demob/Disposal	\$10,000					pj
Regrade Berm Soils		per cy				pj
Seed/Sod						Baird
	\$1	per sy				Baird
Dewatering - Mechanical						
Mobilization	\$100,000					pj
Holding Pond-Centrifuge	\$80	per bone dry ton				Global Dewatering
Water Treatment						
Flow Rate (passive dewatering)	395	gpm				assume operate 24/7
Unit, Purchase (passive dewatering)	\$691,096	LS				pj
Flow Rate (mechanical dewatering)	484	gpm				
Unit, Purchase (mechanical dewatering)	\$781,094	LS				
Water Treatment (Including Operator)	\$0.40	per 1,000 gallons				pj
Water Treatment OA		per day				pj, 1 sample/day
		1				135 1
<u>Disposal</u>						
Off-Site Disposal						
Load Soil for Hauling	\$2.80	per ton				ni
Round-trip Hauling		hours				pj pi
1 0						pj :
Round-trip Hauling (to Vitrification Facility)		hours				pj G: P. I
Tipping Fee (non-TSCA)		per ton				St. Paul
Tipping Fee (TSCA)		per ton				St. Paul
Truck Rate		per hour				pj
Truck Load	32	tons				pj
Institutional Controls						
Public Education Program	\$100,000					pj
O&M Plans	\$20,000					pj
Deed Restrictions	\$5,000					pj
Annual Costs						1.0
Public Education Program	\$30,000					ni
Maintaining O&M Plans	\$800					pj ni
Reporting	\$20,000					pj pi
						pj Anno I TM
Long-term Monitoring	\$600,000					Anne LTM Anne LTM
Long-term Monitoring (no action)	\$300,000					Allie L I W
AN EXPLOSION AND A STATE OF						

ALTERNATIVE A: No Action

INSTITUTIONAL CONTROLS

Capital Items	Q	uantity	Units	Cost
Deed Restrictions		1	LS	\$5,000
	Direct Capital: Engineering, Procurement & Construction	n Manageme	ent:	\$5,000 600
	Total Capital:			\$5,600
Present Worth of Longer Term Operating Costs Years Annual Cost Long-term Monitoring (no action) 40 \$300,000				\$4,513,889
	Total Present Worth, Longer Term O&M	Costs		\$4,513,889
	Total Project Capital and O&M Cost			\$4 500 000

ALTERNATIVE B: Monitored Natural Recovery

MONITORING/INSTITUTIONAL CONTROLS

Capital Items	Quantity	Units		Cost
Public Education Program	1	LS		\$100,000
O&M Plans	1	LS		\$20,000
Deed Restrictions	1	LS		\$5,000
Direct Capital:				\$125,000
Engineering, Procurement & Co	onstruction Managem	ent:		15,000
Total Capital:				\$140,000
Present Worth of Longer Term Operating Costs	s	Years	Annual Cost	
Long-term Monitoring		40	\$600,000	\$9,027,778
Public Education Program		40	\$30,000	\$451,389
Maintaining O&M Plans		40	\$800	\$12,037
Reporting		40	\$20,000	\$300,926
Total Present Worth, Longer To	erm O&M Costs			\$9,792,130
Total Project Capital and O&	M Cost			\$9,900,000

ALTERNATIVE C1: Dredge Sediment With Off-site Disposal (Passive Dewatering)

SEDIMENT REMOVAL (CUTTERHEAD)

Capital Items	Quantity	Units		Cost
Site Preparation	2	Each		\$200,000
Mobilization - Equipment and Silt Curtain	1	LS		\$170,000
Debris Sweep	174	acre		\$2,784,000
Dredging - 12 hour shifts	269	Day	2.069230769	\$1,533,300
Dredge Monitoring (Water Quality)	269	Day		\$807,000
Sediment Removal QA	269	Day		\$322,800
Site Restoration	2	Each		\$1,200,000
Direct Capital:				\$7,017,100
Engineering, Procurement & O	Construction Managem	ent:		842,052
Contractor Overhead/Profit:				1,052,565
Total Capital:				\$8,900,000

SEDIMENT DEWATERING (GRAVITY)

Capital Items	Quantity	Units	Cost
Land Lease or Purchase	644,791	sf	\$1,160,624
Mobilization	1	LS	\$20,000
Clear and Grub	644,791	sf	\$29,605
Berm Construction	33,309	cy	\$199,855
Rough Grading	644,791	sf	\$161,198
Liner Placement	644,791	sf	\$967,187
Demob/Disposal	1	LS	\$10,000
Regrade	33,309	cy	\$199,855
Seed/Sod	71,643	sy	\$71,643
Direct Capital:			\$2,819,968
Engineering, Procurement &	Construction Managem	ent:	338,396
Total Capital:			\$3,200,000
	WATER TE	REATMENT	
Unit Purchase	395	gpm	\$691,096
Water Treatment (Includes Operator)	213,577,331	gal	\$85,431
Water Treatment QA	376	day	\$75,200
Direct Capital:			\$851,727
Engineering, Procurement &	Construction Managem	ent:	102,207
Total Capital:			\$1,000,000

SEDIMENT DISPOSAL (Existing NR 500 Commercial Disposal Facility)

Capital Items		Quantity	Units	Cost
Solidification		336,052	ton	\$8,401,300
Lime Purchase		33,606	ton	\$2,016,360
Soil Loading		336,052	ton	\$940,946
Soil Hauling		336,052	ton	\$1,575,244
Tipping Fees (non-TSCA	a)	316,767	ton	\$13,620,975
Tipping Fees (TSCA)		19,285	ton	\$1,060,682
	Direct Capital:			\$27,615,507
	Engineering, Procurement & Construc	ction Manageme	ent:	3,313,861
	Total Capital:			\$30,900,000

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Construc	ction Manageme	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth of Longer Term Operating Costs Years Annual Cost Long-term Monitoring (no action) 40 \$300,000			\$4,513,889		
	Total Present Worth, Longer Term O&	&M Costs			\$4,513,889
	Total Project Capital and O&M Co	st			\$4,500,000
	TOTAL COST				\$48,500,000

ALTERNATIVE C2: Dredge Sediment With Off-site Disposal (Mechanical Dewatering)

SEDIMENT REMOVAL (CUTTERHEAD)

Capital Items	Quantity	Units		Cost
Site Preparation	2	Each		\$200,000
Mobilization - Equipment and Silt Curtain	1	LS		\$170,000
Debris Sweep	174	acre		\$2,784,000
Dredging - 12 hour shifts	269	Day	2.069230769	\$1,533,300
Dredge Monitoring (Water Quality)	269	Day		\$807,000
Sediment Removal QA	269	Day		\$322,800
Site Restoration	2	Each		\$1,200,000
Direct Capital:				\$7,017,100
Engineering, Procurement & Con	struction Managem	ent:		842,052
Contractor Overhead/Profit:				1,052,565

Total Capital: \$8,900,000

SEDIMENT DEWATERING (MECHANICAL)

Capital Items Mobilization/Site Prep Dewatering	Quantity 1 67,210	Units LS bdt	Cost \$100,000 \$5,376,820
	Direct Capital:		\$5,476,820
	Engineering, Procurement & Construction Managem	ient:	657,218
	Total Capital:		\$6,100,000

WATER TREATMENT

Capital Items	Quantity	Units	Cost
Unit Purchase	484	gpm	\$781,094
Water Treatment (Includes Operator)	261,917,015	gal	\$104,767
Water Treatment QA	376	day	\$75,200
Direct Capital:			\$961,061
Engineering, Procurement	& Construction Manageme	nt:	115,327
Engineering, 1 rocaronient	a construction manageme		110,527

Total Capital: \$1,100,000

SEDIMENT DISPOSAL (Existing NR 500 Commercial Disposal Facility)

Capital Items	Quantity	Units	Cost
Soil Loading	134,421	ton	\$376,377
Soil Hauling	134,421	ton	\$630,096
Tipping Fees (non-TSCA)	126,706	ton	\$5,448,378
Tipping Fees (TSCA)	7,714	ton	\$424,272
Direct Capital:			\$6,879,124
Engineering, Procurement & Construc	tion Managem	ent:	825,495
Total Capital:			\$7,700,000

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Construc	ction Manageme	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth of Long-term Monitoring	of Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term Od	&M Costs			\$4,513,889
	Total Project Capital and O&M Co	st			\$4,500,000
	TOTAL COST				\$28,300,000

ALTERNATIVE D: Dredge Sediment, CDF and Off-site Disposal

SEDIMENT REMOVAL (MECHANICAL DREDGING)

Capital Items	Quantity	Units	Cost
Mobilization - Equipment and Silt Curtain	1	LS	\$490,000
Watertight Barges	4	ea	\$400,000
Offload Stockpile Area Prep.	1	LS	\$75,000
Dredging - 12 hour shifts	26	Day	\$234,000
Dredge Monitoring (Water Quality)	26	Day	\$78,000
Sediment Removal QA	26	Day	\$31,200
Offload Crane Mobilization	1	LS	\$50,000
Direct Capital:			\$1,358,200
Engineering, Procurement & Co	onstruction Managem	ent:	162,984
Watertight Barges 4 ea Offload Stockpile Area Prep. 1 LS Dredging - 12 hour shifts 26 Day Dredge Monitoring (Water Quality) 26 Day Sediment Removal QA 26 Day Offload Crane Mobilization 1 LS			203,730
Total Capital:			\$1,700,000

SEDIMENT DISPOSAL (Existing NR 500 Commercial Disposal Facility)

Capital Items		Quantity	Units	Cost
Solidification		19,286	ton	\$482,150
Lime Purchase		1,929	ton	\$115,740
Soil Loading		19,286	ton	\$54,001
Soil Hauling		19,286	ton	\$90,403
Tipping Fees (TSCA)		19,286	ton	\$1,060,730
	Direct Capital:			\$1,803,024
	Engineering, Procurement & Construc	ction Managem	ent:	216,363
	Total Capital:			\$2,000,000

Capital Items		Quantity	Units		Cost
Site Preparation		2	each		\$200,000
Mobilization - Equipme	ent and Silt Curtain	1	LS		\$170,000
Debris Sweep Dredging - 12 hour shif	te	174 253	acre Day		\$2,784,000 \$1,442,100
Dredge Monitoring (Wa		253	Day		\$759,000
Sediment Removal QA	(,)	253	Day		\$303,600
Site Restoration		1	LS		\$600,000
	Direct Capital:				\$6,258,700
	Engineering, Procurement & Const	ruction Manageme	ent:		751,044
	Contractor Overhead/Profit:				938,805
	Total Capital:				\$7,900,000
	CDF	CONSTRUCT	ΓΙΟΝ - ARR	OWHEAD	
Capital Items		Quantity	Units		Cost
Land Lease or Purchase	:	2,520,000	sf		\$4,536,000
Shot Rock/Rip Rap		8,000	lf		\$6,920,000
Sheetpile Placement		240,000	sf		\$4,560,000
Clean Soil Cap		190,000	cy		\$1,900,000
Seeding Mitigation		280,000 58	sy acre		\$280,000 \$578,512
witigation		56	acre		\$376,312
	Direct Capital:				\$18,774,512
	Engineering, Procurement & Const	ruction Manageme	ent:		2,252,941
	Total Capital:				\$21,027,454
	Total Capitali				921,927,101
	f Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	10,000	\$150,463
Long-term Monitoring Long-term O&M			40 40	650,000 420,549	\$9,780,093 \$6,327,706
zong term otem			.0	120,019	
	Total Present Worth, Longer Term	O&M Costs			\$16,258,262
	Total Project Capital and O&M	Cost			\$37,300,000
		WATER 1	TREATMEN	TT	
Capital Items		Quantity	Units		Cost
Unit Purchase		484	gpm		\$781,094
Water Treatment (Inclu	des Operator)	247,212,770	gal		\$98,885
Water Treatment QA		376	day		\$75,200
	Direct Capital:				\$955,179
	Engineering, Procurement & Const	ruction Manageme	ent:		114,621
	Total Capital:				\$1,100,000
	Total Capital.				\$1,100,000
		INSTITUTIO	NAL CONT	ROLS	
Capital Items		Quantity	Units		Cost
Deed Restrictions		1	LS		\$5,000
	Direct Capital:				\$5,000
	Engineering, Procurement & Const	ruction Manageme	ent:		600
	Total Capital:				\$5,600
Present Worth o	f Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring	(no action)		40	\$300,000	\$4,513,889
	Total Present Worth, Longer Term	O&M Costs			\$4,513,889
	Total Project Capital and O&M	Cost			\$4,500,000
	roject Capital and Ottin				ψ-1,500,000
	TOTAL COST				\$54,500,000

ALTERNATIVE E: Dredge Sediment and Thermal Treatment

Capital Items Site Preparation Mobilization - Equipme Debris Sweep Dredging - 12 hour shif Dredge Monitoring (Wa Sediment Removal QA Site Restoration	ts tter Quality)	Quantity 2 1 174 269 269 269 269 2	Units Each LS acre Day Day Day Each		Cost \$200,000 \$170,000 \$2,784,000 \$1,533,300 \$807,000 \$322,800 \$1,200,000
	Direct Capital: Engineering, Procurement & Con Contractor Overhead/Profit:	struction Manageme	ent:		\$7,017,100 842,052 1,052,565
	Total Capital:				\$8,900,000
	SEDIM	MENT DEWAT	ERING (GR	RAVITY)	
Capital Items Land Lease or Purchase Mobilization Clear and Grub Berm Construction Rough Grading Liner Placement Demob/Disposal Regrade Seed/Sod		Quantity 644,791 1 644,791 33,309 644,791 1 33,309 71,643	Units sf LS sf cy sf sf LS sf sy		Cost \$1,160,624 \$20,000 \$29,605 \$199,855 \$161,198 \$967,187 \$10,000 \$199,855 \$71,643
	Direct Capital:				\$2,819,968
	Engineering, Procurement & Con-	struction Manageme	ent:		338,396
	Total Capital:				\$3,200,000
		WATER TR	EATMENT		
Capital Items		Quantity	Units		Cost
Unit Purchase Water Treatment (Inclu Water Treatment QA	des Operator)	395 213,577,331 376	gpm gal day		\$691,096 \$85,431 \$75,200
	Direct Capital: Engineering, Procurement & Con-	struction Manageme	ent:		\$851,727 102,207
	Total Capital:	r autobiela i	FION 1 250	4 V. 4 4. J. 64 V	\$1,000,000
	SEDIMENT TREATMENT	I (VII RIFICA	110N 1x250	tons Integrated Storage Uni	t)
Capital Items Sediment Treatment Soil Loading Soil Hauling	Direct Capital: Engineering, Procurement & Con	Quantity 336,051 336,051 336,051 struction Management	Units ton ton ton		Cost \$9,073,384 \$940,944 \$393,810 \$10,408,138 \$1,248,977
	Total Capital:				\$11,700,000
	11	NSTITUTIONA	AL CONTRO	DLS	
Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Con	struction Manageme	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth o Long-term Monitoring	f Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term	n O&M Costs			\$4,513,889
	Total Project Capital and O&M	I Cost			\$4,500,000
	TOTAL COST				\$29,300,000

ALTERNATIVE F: Cap Sediment to Maximum Extent Possible, Dredge to CDF and Off-site Disposal

SEDIMENT REMOVAL (MECHANICAL DREDGING)

Capital Items		Quantity	Units		Cost
Mobilization - Equipme	ent and Silt Curtain	1	LS		\$490,000
Watertight Barges		4	ea		\$400,000
Offload Stockpile Area	=	1	LS		\$75,000
Dredging - 12 hour shift		26 26	Day		\$234,000 \$78,000
Dredge Monitoring (Was Sediment Removal QA		26	Day Day		\$31,200
Offload Crane Mobiliza		1	LS		\$50,000
	Direct Capital:				\$1,358,200
	Engineering, Procurement & Const	ruction Managem	ent:		162,984
	Contractor Overhead/Profit:				203,730
	Total Capital:				\$1,700,000
	SEDIMENT DISPOSA	L (Existing N	R 500 Comm	nercial Disposal Facility)	
Capital Items		Quantity	Units		Cost
Solidification		19,286	ton		\$482,150
Cement Purchase		1,929	ton		\$115,740
Soil Loading		19,286	ton		\$54,001
Soil Hauling		19,286	ton		\$90,403
Tipping Fees (TSCA)		19,286	ton		\$1,060,730
ripping rees (rise.r)		17,200	1011		Ψ1,000,730
	Direct Capital:				\$1,803,024
	Engineering, Procurement & Const	ruction Managem	ent:		216,363
	Total Capital:				\$2,000,000
		CA	APPING		
		CA	ITING		
Capital Items		Quantity	Units		Cost
Mobilization/Site Prep		1	LS		\$200,000
Sand Purchase Sand Placement		154,784 110,560	tons		\$928,704 \$663,360
Cobble Purchase and P	lacement	66,336	cy cy		\$1,990,079
Cap Placement QA		1	LS		\$100,000
	D' + C - '- 1				#2 002 142
	Direct Capital: Engineering, Procurement & Const	ruction Managem	ent:		\$3,882,142 465,857
	Total Capital:				\$4,347,999
Present Worth of	of Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring			40	\$400,000	\$6,018,519
Long-term O&M			40	\$86,960	\$1,308,426
	Total Present Worth, Longer Term	O&M Costs			\$7,326,945
	Total Project Capital and O&M	Cost			\$11,700,000
	SEDIMENT	REMOVAL (10-INCH CU	TTERHEAD)	
Capital Items		Quantity	Units		Cost
Site Preparation		2	Each		\$200,000
Mobilization - Equipme	ent and Silt Curtain	1	LS		\$170,000
Debris Sweep	2-	174	acre		\$2,784,000
Dredging - 12 hour shift		197 197	Day		\$1,122,900 \$591,000
Dredge Monitoring (Wa Sediment Removal QA		197	Day Day		\$591,000 \$236,400
Site Restoration		2	Each		\$1,200,000
	Direct Capital:				\$6,304,300
	Engineering, Procurement & Const	ruction Managem	ent:		756,516
	Contractor Overhead/Profit:	<i>J</i> -			945,645

Total Capital:

\$8,000,000

WATER TREATMENT

Capital Items		Quantity	Units		Cost
Unit Purchase		484	gpm		\$781,094
Water Treatment (Incli	udes Operator)	192,303,134	gal		\$76,921
Water Treatment QA		297	Day		\$59,400
	Direct Capital:				\$917,415
	Engineering, Procurement & Constr	uction Manageme	ent:		110,090
	Total Capital:				\$1,000,000
	_			DOY 0	
	ı	INSTITUTIO	NAL CONTI	ROLS	
Capital Items		Quantity	Units		Cost
Deed Restrictions		1	LS		\$5,000
	Direct Capital:				\$5,000
	Engineering, Procurement & Constr	uction Manageme	ent:		600
	T (10 %)				65 (00
	Total Capital:				\$5,600
Present Worth	of Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring	(no action)		40	\$300,000	\$4,513,889
	Total Present Worth, Longer Term C	O&M Costs			\$4,513,889
	Total Project Capital and O&M C	ost			\$4,500,000
					\$ 1,000,000
	TOTAL COST				\$66,200,000

Table 7-6 Cost Summary for Remedial Alternatives - Appleton to Little Rapids

Alternative	Dredge Volume (cy)	Hydraulic Dredging	Mechanical Dredging	Capping	Dewatering	Water Treatment	Thermal Treatment	CDF Construction	Off-site Disposal	Institutional Controls	Subtotal	20% Contingency	TOTAL
Α	0									\$4,500,000	\$4,500,000	\$900,000	\$5,400,00
В	0									\$9,900,000	\$9,900,000	\$1,980,000	\$11,880,00
С	182,450	\$10,100,000			\$3,000,000	\$900,000			\$19,800,000	\$4,500,000	\$38,300,000	\$7,660,000	\$45,960,00
E	182,450	\$10,100,000			\$3,000,000	\$900,000	\$7,700,000			\$4,500,000	\$26,200,000	\$5,240,000	\$31,440,00
250 ppb													
Alternative	Dredge Volume (cy)	Hydraulic Dredging	Mechanical Dredging	Capping	Dewatering	Water Treatment	Thermal Treatment	CDF Construction	Off-site Disposal	Institutional Controls	Subtotal	20% Contingency	TOTAL
Α	0									\$4,500,000	\$4,500,000	\$900,000	\$5,400,00
В	0									\$9,900,000	\$9,900,000	\$1,980,000	\$11,880,00
С	80,611	\$8,000,000			\$3,000,000	\$800,000			\$8,700,000	\$4,500,000	\$25,000,000	\$5,000,000	\$30,000,00
E	80,611	\$8,000,000			\$3,000,000	\$800,000	\$3,400,000			\$4,500,000	\$19,700,000	\$3,940,000	\$23,640,00
500 ppb													
Alternative	Dredge Volume (cy)	Hydraulic Dredging	Mechanical Dredging	Capping	Dewatering	Water Treatment	Thermal Treatment	CDF Construction	Off-site Disposal	Institutional Controls	Subtotal	20% Contingency	TOTAL
Α	0									\$4,500,000	\$4,500,000	\$900,000	\$5,400,00
В	0									\$9,900,000	\$9,900,000	\$1,980,000	\$11,880,00
С	56,998	\$7,200,000			\$3,000,000	\$800,000			\$6,200,000	\$4,500,000	\$21,700,000	\$4,340,000	\$26,040,00
Е	56,998	\$7,200,000			\$3,000,000	\$800,000	\$2,400,000			\$4,500,000	\$17,900,000	\$3,580,000	\$21,480,00
1000 ppl	b												
Alternative	Dredge Volume (cy)	Hydraulic Dredging	Mechanical Dredging	Capping	Dewatering	Water Treatment	Thermal Treatment	CDF Construction	Off-site Disposal	Institutional Controls	Subtotal	20% Contingency	TOTAL
Α	0									\$4,500,000	\$4,500,000	\$900,000	\$5,400,00
В	0									\$9,900,000	\$9,900,000	\$1,980,000	\$11,880,00
С	46,178	\$6,800,000			\$3,000,000	\$800,000			\$5,000,000	\$4,500,000	\$20,100,000	\$4,020,000	\$24,120,00
E	46,178	\$6,800,000			\$3,000,000	\$800,000	\$2,000,000			\$4,500,000	\$17,100,000	\$3,420,000	\$20,520,00
5000 ppl	b												
Alternative	Dredge Volume (cy)	Hydraulic Dredging	Mechanical Dredging	Capping	Dewatering	Water Treatment	Thermal Treatment	CDF Construction	Off-site Disposal	Institutional Controls	Subtotal	20% Contingency	TOTAL
Α	0									\$4,500,000	\$4,500,000	\$900,000	\$5,400,00
A B	0									\$4,500,000 \$9,900,000	\$4,500,000 \$9,900,000	\$900,000 \$1,980,000	\$5,400,00 \$11,880,00

\$3,000,000

\$800,000

\$900,000

\$15,200,000

\$3,040,000

\$18,240,000

\$4,500,000

Е

\$6,000,000

20,148

BASIS FOR PRELIMINARY COST ESTIMATES

SEDIMENT REMEDIATION

FOX RIVER, WISCONSIN

APPLETON TO LITTLE RAPIDS

Action Level - 125 ppb

Material Handling Assumptions:							
Volume > 125 ppb	182,450	cv 1	19 ac	139.275	5 m3		Acres corresponds to dredge
Volume > 250 ppb	80,611			61,535			footprint area
Volume > 500 ppb	56,998			43,510) m3		1
Volume > 1,000 ppb	46,178	cy		35,250	m3		
Volume > 5000 ppb	20,148	cy		15,380	m3		
Volume > 50,000 ppb	0	cy		0	m3		
Solids Specific Gravity	2.4						
Fresh Water Density		lb/ft3					
In Situ Density	24.2%		7% v/v	0.98	tons per cy		
Slurry Density (20% in situ)	5.5%		3% v/v		tons per cy		Ogden Beeman
Dewatered Density			4% v/v		tons per cy		Montgomery Watson
Dewatered Density (mechanical and CDF)	50%		4% v/v		tons per cy	1	Foth & VanDyke
Treated Density	93.5%		0% v/v		tons per cy		
HTTD Treatment Capacity	1,264,377			1,650,000			
Vitrification Treatment Capacity	1,328,888	cy in situ		2145500.00	tons		
Cost Estimating Parameters & Methodology:							
Interest Rate	6.0%						
Sales Tax	5.5%]	Not Used
Engineering, Procurement and Construction Mgmt	12.0%						
Contractor Overhead and Profit - Dredging Only	15.0%						
Dredging							
Debris Sweep	\$16,000					•	Ogden Beeman
Dredge Monitoring (Water Quality)	\$3,000						
Sediment Removal QA	\$1,200	per day					
Hydraulic - 10-inch Cutterhead							
Site Preparation		per dredge lau	nch site				pj
Mobilization - Equipment		per dredge					Ogden Beeman
Mobilization - Silt Curtain	\$35,000						Ogden Beeman
Shift Rate (10 hours)		per shift	0.1 1.10				Ogden Beeman
Dredge Rate		cy in situ per 1					Ogden Beeman
Site Restoration	\$600,000	per dredge lau	ich site]	pj
High Temperature Thermal Desorption	\$50,000						:
Setup Staging Area Mobilization/Site Prep	\$150,000						pj Maxymillian
Sediment Treatment QA		per ton					waxyiiiiiiaii
Ratio of Amending Sand Volume to Dredge Vol.	0.25						
Sand Purchase and Deliver		per ton					Ole
Blending		per ton					Ole
HTTD (includes off-gas treatment)		per ton					Maxymillian
Stack Testing	\$50,000						Maxymillian
Place Treated Material		per ton					
Solidification	*-						
Percent Lime	10.0%	(w/w)]	Montgomery Watson
Lime	\$60	per ton	Mixing	\$25	per ton		pj, pug mill mixing
Vitrification							
Vitrification	\$27.0	per ton (250 g	lass ton per dya m	elter unit)		1	Unit Cost Study- Minergy
Dewatering - Upland Pond (2 cells)							
Land Lease or Purchase	\$1.80	per sf					Ole
Area	608,771		13.97546543	3			2 days slurry + 13 wk solids * 2 cell
Perimeter	3,121						assume square
Depth of Material in Dewatering Cell		feet					based on size at Arrowhead Park
Cell Retention Time		hours				1	Not Used
Cell Depth		feet					
Mobilization Clear and Grub	\$20,000	per acre					pj :
Berm Volume		cy per lf					pj 2:1 slope, 8-foot top
Berm Construction		per cy					рј
Rough Grading	\$0.25						pj
Asphalt Liner	\$1.50						pj, 2 2-inch lifts
Demob/Disposal	\$10,000						pj
Regrade Berm Soils		per cy					pj
Seed/Sod		per sy					Baird
Dewatering - Mechanical		· •					
Mobilization	\$100,000					1	pj
Holding Pond-Centrifuge		per bone dry to	on				Global Dewatering
Water Treatment							
Flow Rate	395	gpm				:	assume operate 24/7
Unit, Purchase	\$691,235					1	pj
Water Treatment (Including Operator)		per 1,000 gallo	ons				
Water Treatment QA		per day					
Flow Rate (mechanical dewatering)		gpm					pj
							na Laomanla/days
Unit, Purchase (mechanical dewatering)	\$780,778	LS				I	pj, 1 sample/day

Disposal		
Off-Site Disposal		
Load Soil for Hauling \$2.80	per ton	pj
Round-trip Hauling 2	hours	pj
Round-trip Hauling (to Vitrification Facility) 0.5	hours	pj
Tipping Fee (non-TSCA) \$43	per ton	St. Paul
Tipping Fee (TSCA) \$55	per ton	St. Paul
Truck Rate \$75	per hour	pj
Truck Load 32	tons	pj
Institutional Controls		
Public Education Program \$100,000		pj
O&M Plans \$20,000		pj
Deed Restrictions \$5,000		pj
Annual Costs		
Public Education Program \$30,000		pj
Maintaining O&M Plans \$800		pj
Reporting \$20,000		pj
Long-term Monitoring \$600,000		Anne LTM
Long-term Monitoring (no action) \$300,000		Anne LTM

ALTERNATIVE A: No Action

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions	Qı	uantity 1	Units LS		Cost \$5,000
	et Capital: neering, Procurement & Construction	Management:			\$5,000 600
Total	l Capital:				\$5,600
Present Worth of Long Long-term Monitoring (no acti	er Term Operating Costs		Years 40	Annual Cost \$300,000	\$4,513,889
Total	Present Worth, Longer Term O&M	Costs			\$4,513,889
Total	l Project Capital and O&M Cost				\$4,500,000

ALTERNATIVE B: Monitored Natural Recovery

MONITORING/INSTITUTIONAL CONTROLS

Capital Items	Quantity	Units		Cost
Public Education Program	1	LS		\$100,000
O&M Plans	1	LS		\$20,000
Deed Restrictions	1	LS		\$5,000
Direct Capital:				\$125,000
Engineering, Procurement	& Construction Managem	nent:		15,000
Total Capital:				\$140,000
Present Worth of Longer Term Operating O	Costs	Years	Annual Cost	
Long-term Monitoring		40	\$600,000	\$9,027,778
Public Education Program		40	\$30,000	\$451,389
Maintaining O&M Plans		40	\$800	\$12,037
Reporting		40	\$20,000	\$300,926
Total Present Worth, Longo	er Term O&M Costs			\$9,792,130
Total Project Capital and	O&M Cost			\$9,900,000

ALTERNATIVE C: Dredge Sediment With Off-site Disposal

Capital Items	Quantity	Units		Cost
Site Preparation	5	Each		\$500,000
Mobilization - Equipment and Silt Curtain	5	LS		\$850,000
Debris Sweep	119	ac		\$1,904,000
Dredging - 12 hour shifts	174	Day	1.338461538	\$991,800
Dredge Monitoring (Water Quality)	174	Day		\$522,000
Sediment Removal QA	174	Day		\$208,800
Site Restoration	5	Each		\$3,000,000
Direct Capital:				\$7,976,600
Engineering, Procurement & O	Construction Managem	ent:		957,192
Contractor Overhead/Profit:				1,196,490
Total Capital:				\$10,100,000

SEDIMENT DEWATERING (GRAVITY)

	SEDIM	ENI DEWAI	EKING (GN	(AVIII)	
Capital Items		Quantity	Units		Cost
Land Lease or Purchase		608,771	sf		\$1,095,788
Mobilization		1	LS		\$20,000
Clear and Grub		608,771	sf		\$27,951
Berm Construction		32,365	cy		\$194,193
Rough Grading		608,771	sf		\$152,193
Liner Placement		608,771	sf		\$913,157
Demob/Disposal		1 32,365	LS		\$10,000
Regrade Seed/Sod		67,641	cy sy		\$194,193 \$67,641
Seed/Sod		07,041	sy		\$67,041
	D: +C :+1				¢2.675.115
	Direct Capital:				\$2,675,115
	Engineering, Procurement & Constr	ruction Managem	ent:		321,014
	Total Capital:				\$3,000,000
		WATER TR	EATMENT		
					_
Capital Items		Quantity	Units		Cost
Unit Purchase		395	gpm		\$691,235
Water Treatment (Inclu	des Operator)	138,380,705	gal		\$55,352
Water Treatment QA		244	day		\$48,800
	Direct Conitals				P705 200
	Direct Capital:				\$795,388
	Engineering, Procurement & Constr	ruction Managem	ent:		95,447
	Total Capital:				\$900,000
	SEDIMENT DISPOSA	L (Existing N	R 500 Comm	nercial Disposal Facility)	
		`			
Capital Items		Quantity	Units		Cost
Solidification		216,541	ton		\$5,413,525
Lime Purchase		21,655	ton		\$1,299,300
Soil Loading		216,541	ton		\$606,315
Soil Hauling		216,541	ton		\$1,015,036
Tipping Fees (non-TSC	A)	216,541	ton		\$9,311,263
ripping rees (non-13C	A)	210,541	ton		\$9,311,203
	Direct Capital:				\$17,645,439
	Engineering, Procurement & Constr	ruction Managem	ent:		2,117,453
	Engineering, Procurement & Consu	ruction managem	CIIC.		2,117,433
	Total Capital:				\$19,800,000
	1	INSTITUTIO	NAL CONT	ROLS	
Capital Items		Quantity	Units		Cost
Deed Restrictions		1	LS		\$5,000
	Direct Capital: Engineering, Procurement & Constr	ruction Managem	ent:		\$5,000 600
	Total Capital:				\$5,600
	•				
Present Worth o Long-term Monitoring	f Longer Term Operating Costs		Years 40	Annual Cost \$300,000	\$4.512.880
Long-term Monitoring	no action)		40	\$300,000	\$4,513,889
	Total Present Worth, Longer Term	O&M Costs			\$4,513,889
	Total Project Capital and O&M (Cost			\$4,500,000
	TOTAL COST				#30 300 CCC
	TOTAL COST				\$38,300,000

ALTERNATIVE E: Dredge Sediment and Thermal Treatment

Capital Items		Quantity	Units		Cost
Site Preparation		5	Each		\$500,000
Mobilization - Equipme	ent and Silt Curtain	5	LS		\$850,000
Debris Sweep		119	ac		\$1,904,000
Dredging - 12 hour shift	ts	174	Day	1.338461538	\$991,800
Dredge Monitoring (W	ater Quality)	174	Day		\$522,000
Sediment Removal QA		174	Day		\$208,800
Site Restoration		5	Each		\$3,000,000
	Direct Capital:				\$7,976,600
	Engineering, Procurement & Cons	truction Manageme	ent:		957,192
	Contractor Overhead/Profit:				1,196,490
	Total Capital:				\$10,100,000
	SEDIN	IENT DEWAT	ERING (GF	RAVITY)	
Capital Items		Quantity	Units		Cost
Land Lease or Purchase	2	608,771	sf		\$1,095,788
Mobilization		1	LS		\$20,000
Clear and Grub		608,771	sf		\$27,951
Berm Construction		32,365	cy		\$194,193
Rough Grading		608,771	sf		\$152,193
Liner Placement		608,771	sf		\$913,157
Demob/Disposal		1	LS		\$10,000
Regrade		32,365			\$194,193
Seed/Sod		67,641	cy		\$67,641
Seed/Sod		07,041	sy		307,041
	Direct Capital:				\$2,675,115
	Engineering, Procurement & Cons	truction Managem	ent:		321,014
	8,				
	Total Capital:				\$3,000,000
	Total Capital.				33,000,000
		WATER TR	FATMENT	•	
		WAILKIK	EATMENT		
Capital Items		Quantity	Units		Cost
Unit Purchase		395	gpm		\$691,235
Water Treatment (Inclu	des Operator)	138,380,705	gal		\$55,352
Water Treatment QA		244	day		\$48,800
	Direct Capital:				\$795,388
	Engineering, Procurement & Cons	truction Managam	ant:		95,447
	Engineering, Frocurement & Cons	il uction ivianagem	ciit.		73,447
	Total Capital:				\$900,000
	SEDIMENT TREATMENT	(VITRIFICAT	ΓΙΟΝ 1x250	tons Integrated Storage Unit)	
Capital Items					
		Ouantity	Units		Cost
Segiment Treatment		Quantity 216 541	Units ton		Cost \$5 846 596
Sediment Treatment Soil Loading		216,541	ton		\$5,846,596
Soil Loading		216,541 216,541	ton ton		\$5,846,596 \$606,314
	Direct Capital	216,541	ton		\$5,846,596 \$606,314 \$253,758
Soil Loading	Direct Capital:	216,541 216,541 216,541	ton ton ton		\$5,846,596 \$606,314 \$253,758 \$6,706,668
Soil Loading	Direct Capital: Engineering, Procurement & Cons	216,541 216,541 216,541	ton ton ton		\$5,846,596 \$606,314 \$253,758
Soil Loading	Engineering, Procurement & Cons	216,541 216,541 216,541	ton ton ton		\$5,846,596 \$606,314 \$253,758 \$6,706,668
Soil Loading		216,541 216,541 216,541	ton ton ton		\$5,846,596 \$606,314 \$253,758 \$6,706,668 \$1,006,000
Soil Loading	Engineering, Procurement & Cons	216,541 216,541 216,541	ton ton ton	ROLS	\$5,846,596 \$606,314 \$253,758 \$6,706,668 \$1,006,000
Soil Loading	Engineering, Procurement & Cons	216,541 216,541 216,541 truction Manageme	ton ton ton	ROLS	\$5,846,596 \$606,314 \$253,758 \$6,706,668 \$1,006,000
Soil Loading Soil Hauling	Engineering, Procurement & Cons	216,541 216,541 216,541 truction Manageme	ton ton ton	ROLS	\$5,846,596 \$606,314 \$253,758 \$6,706,668 \$1,006,000
Soil Loading	Engineering, Procurement & Cons	216,541 216,541 216,541 216,541 truction Management	ton ton ton ent:	ROLS	\$5,846,596 \$606,314 \$253,758 \$6,706,668 \$1,006,000
Soil Loading Soil Hauling Capital Items	Engineering, Procurement & Cons	216,541 216,541 216,541 truction Management INSTITUTIO	ton ton ton ent: NAL CONT Units	ROLS	\$5,846,596 \$606,314 \$253,758 \$6,706,668 \$1,006,000 \$7,700,000
Soil Loading Soil Hauling Capital Items	Engineering, Procurement & Cons	216,541 216,541 216,541 truction Management INSTITUTIO	ton ton ton ent: NAL CONT Units	ROLS	\$5,846,596 \$606,314 \$253,758 \$6,706,668 \$1,006,000 \$7,700,000
Soil Loading Soil Hauling Capital Items	Engineering, Procurement & Cons Total Capital:	216,541 216,541 216,541 216,541 truction Management INSTITUTIO Quantity 1	ton ton ton ent: NAL CONT Units LS	ROLS	\$5,846,596 \$606,314 \$253,758 \$6,706,668 \$1,006,000 \$7,700,000 Cost \$5,000
Soil Loading Soil Hauling Capital Items	Engineering, Procurement & Cons Total Capital: Direct Capital:	216,541 216,541 216,541 216,541 truction Management INSTITUTIO Quantity 1	ton ton ton ent: NAL CONT Units LS	ROLS	\$5,846,596 \$606,314 \$253,758 \$6,706,668 \$1,006,000 \$7,700,000 Cost \$5,000
Soil Loading Soil Hauling Capital Items	Engineering, Procurement & Cons Total Capital: Direct Capital: Engineering, Procurement & Cons	216,541 216,541 216,541 216,541 truction Management INSTITUTIO Quantity 1	ton ton ton ent: NAL CONT Units LS	ROLS	\$5,846,596 \$606,314 \$253,758 \$6,706,668 \$1,006,000 \$7,700,000 Cost \$5,000 \$5,000 600
Soil Loading Soil Hauling Capital Items	Engineering, Procurement & Cons Total Capital: Direct Capital:	216,541 216,541 216,541 216,541 truction Management INSTITUTIO Quantity 1	ton ton ton ent: NAL CONT Units LS	ROLS	\$5,846,596 \$606,314 \$253,758 \$6,706,668 \$1,006,000 \$7,700,000 Cost \$5,000
Soil Loading Soil Hauling Capital Items Deed Restrictions	Engineering, Procurement & Cons Total Capital: Direct Capital: Engineering, Procurement & Cons	216,541 216,541 216,541 216,541 truction Management INSTITUTIO Quantity 1	ton ton ton ent: NAL CONT Units LS	CROLS Annual Cost	\$5,846,596 \$606,314 \$253,758 \$6,706,668 \$1,006,000 \$7,700,000 Cost \$5,000 \$5,000 600
Soil Loading Soil Hauling Capital Items Deed Restrictions	Engineering, Procurement & Cons Total Capital: Direct Capital: Engineering, Procurement & Cons Total Capital: of Longer Term Operating Costs	216,541 216,541 216,541 216,541 truction Management INSTITUTIO Quantity 1	ton ton ton ton WAL CONT Units LS ent:		\$5,846,596 \$606,314 \$253,758 \$6,706,668 \$1,006,000 \$7,700,000 Cost \$5,000 \$5,000 600
Soil Loading Soil Hauling Capital Items Deed Restrictions Present Worth of	Engineering, Procurement & Cons Total Capital: Direct Capital: Engineering, Procurement & Cons Total Capital: of Longer Term Operating Costs	216,541 216,541 216,541 216,541 truction Management INSTITUTIO Quantity 1	ton ton ton ton ent: NAL CONT Units LS ent: Years	Annual Cost	\$5,846,596 \$606,314 \$253,758 \$6,706,668 \$1,006,000 \$7,700,000 \$5,000 \$5,000 \$5,600
Soil Loading Soil Hauling Capital Items Deed Restrictions Present Worth of	Engineering, Procurement & Cons Total Capital: Direct Capital: Engineering, Procurement & Cons Total Capital: of Longer Term Operating Costs	216,541 216,541 216,541 truction Management INSTITUTIO Quantity 1 truction Management	ton ton ton ton ent: NAL CONT Units LS ent: Years	Annual Cost	\$5,846,596 \$606,314 \$253,758 \$6,706,668 \$1,006,000 \$7,700,000 \$5,000 \$5,000 \$5,600
Soil Loading Soil Hauling Capital Items Deed Restrictions Present Worth of	Engineering, Procurement & Cons Total Capital: Direct Capital: Engineering, Procurement & Cons Total Capital: of Longer Term Operating Costs (no action)	216,541 216,541 216,541 truction Management INSTITUTIO Quantity 1 truction Management	ton ton ton ton ent: NAL CONT Units LS ent: Years	Annual Cost	\$5,846,596 \$606,314 \$253,758 \$6,706,668 \$1,006,000 \$7,700,000 Cost \$5,000 \$5,000 600 \$5,600
Soil Loading Soil Hauling Capital Items Deed Restrictions Present Worth of	Engineering, Procurement & Cons Total Capital: Direct Capital: Engineering, Procurement & Cons Total Capital: of Longer Term Operating Costs (no action)	216,541 216,541 216,541 truction Management INSTITUTIO Quantity 1 truction Management	ton ton ton ton ent: NAL CONT Units LS ent: Years	Annual Cost	\$5,846,596 \$606,314 \$253,758 \$6,706,668 \$1,006,000 \$7,700,000 Cost \$5,000 \$5,000 600 \$5,600
Soil Loading Soil Hauling Capital Items Deed Restrictions Present Worth of	Engineering, Procurement & Cons Total Capital: Direct Capital: Engineering, Procurement & Cons Total Capital: of Longer Term Operating Costs (no action) Total Present Worth, Longer Term	216,541 216,541 216,541 truction Management INSTITUTIO Quantity 1 truction Management	ton ton ton ton ent: NAL CONT Units LS ent: Years	Annual Cost	\$5,846,596 \$606,314 \$253,758 \$6,706,668 \$1,006,000 \$7,700,000 Cost \$5,000 \$5,000 \$5,600 \$4,513,889
Soil Loading Soil Hauling Capital Items Deed Restrictions Present Worth of	Engineering, Procurement & Cons Total Capital: Direct Capital: Engineering, Procurement & Cons Total Capital: of Longer Term Operating Costs (no action) Total Present Worth, Longer Term	216,541 216,541 216,541 truction Management INSTITUTIO Quantity 1 truction Management	ton ton ton ton ent: NAL CONT Units LS ent: Years	Annual Cost	\$5,846,596 \$606,314 \$253,758 \$6,706,668 \$1,006,000 \$7,700,000 Cost \$5,000 \$5,000 \$5,600 \$4,513,889
Soil Loading Soil Hauling Capital Items Deed Restrictions Present Worth of	Engineering, Procurement & Cons Total Capital: Direct Capital: Engineering, Procurement & Cons Total Capital: of Longer Term Operating Costs (no action) Total Present Worth, Longer Term	216,541 216,541 216,541 truction Management INSTITUTIO Quantity 1 truction Management	ton ton ton ton ent: NAL CONT Units LS ent: Years	Annual Cost	\$5,846,596 \$606,314 \$253,758 \$6,706,668 \$1,006,000 \$7,700,000 Cost \$5,000 \$5,000 \$5,600 \$4,513,889

BASIS FOR PRELIMINARY COST ESTIMATES

SEDIMENT REMEDIATION

FOX RIVER, WISCONSIN

APPLETON TO LITTLE RAPIDS

Action Level - 250 ppb

Material Handling Assumptions:						
Volume > 250 ppb	80,611	cv	73 ac	61,535	5 m3	Acres corresponds to dredge
Volume > 125 ppb	182,450			139,275		footprint area
Volume > 500 ppb	56,998			43,510) m3	•
Volume > 1,000 ppb	46,178	cy		35,250) m3	
Volume > 5000 ppb	20,148	cy		15,380) m3	
Volume > 50,000 ppb	0	cy		0	m3	
Solids Specific Gravity	2.4					
Fresh Water Density		lb/ft3				
In Situ Density	24.2%		1.7% v/v	0.98	tons per cy	
Slurry Density (20% in situ)	5.5%		2.3% v/v		tons per cy	Ogden Beeman
Dewatered Density			9.4% v/v		tons per cy	Montgomery Watson
Dewatered Density (mechanical and CDF)			9.4% v/v		tons per cy	Foth & VanDyke
Treated Density	93.5%		0.0% v/v		tons per cy	
HTTD Treatment Capacity	1,264,377			1,650,000		
Vitrification Treatment Capacity	1,328,888	cy in situ	1	2145500.00	tons	
Cost Estimating Parameters & Methodology:						
Interest Rate	6.0%					
Sales Tax	5.5%					Not Used
Engineering, Procurement and Construction Mgmt	12.0%					
Contractor Overhead and Profit - Dredging Only	15.0%					
Dredging						
Debris Sweep		per acre				Ogden Beeman
Dredge Monitoring (Water Quality)		per day				
Sediment Removal QA	\$1,200	per day				
Hydraulic - 10-inch Cutterhead						
Site Preparation		per dredge la	unch site			pj
Mobilization - Equipment		per dredge				Ogden Beeman
Mobilization - Silt Curtain	\$35,000					Ogden Beeman
Shift Rate (10 hours)		per shift	101 110			Ogden Beeman
Dredge Rate			10 hour shift			Ogden Beeman
Site Restoration	\$600,000	per dredge la	unen site			pj
High Temperature Thermal Desorption	\$50,000					
Setup Staging Area Mobilization/Site Prep	\$150,000					pj Maxymillian
Sediment Treatment QA		per ton				Maxyiiiiiaii
Ratio of Amending Sand Volume to Dredge Vol.	0.25					
Sand Purchase and Deliver		per ton				Ole
Blending		per ton				Ole
HTTD (includes off-gas treatment)		per ton				Maxymillian
Stack Testing	\$50,000					Maxymillian
Place Treated Material		per ton				
Solidification						
Percent Lime	10.0%	(w/w)				Montgomery Watson
Lime	\$60	per ton	Mixing	\$25	per ton	pj, pug mill mixing
Vitrification						
Vitrification	\$27.0	per ton (250	glass ton per day m	elter unit)		Unit Cost Study- Minergy
Dewatering - Upland Pond (2 cells)						
Land Lease or Purchase	\$1.80	per sf				Ole
Area	608,771		13.9754654	3		2 days slurry + 13 wk solids * 2 cell
Perimeter	3,121					assume square
Depth of Material in Dewatering Cell		feet				based on size at Arrowhead Park
Cell Retention Time		hours				Not Used
Cell Depth		feet				
Mobilization Clear and Grub	\$20,000	per acre				pj ni
Berm Volume		cv per lf				pj 2:1 slope, 8-foot top
Berm Construction		per cy				
Rough Grading		per cy per sf				pj pj
Asphalt Liner		per sf				pj, 2 2-inch lifts
Demob/Disposal	\$10,000					pj
Regrade Berm Soils		per cy				pj
Seed/Sod		per sy				Baird
Dewatering - Mechanical		1 ,				
Mobilization	\$100,000					pj
Holding Pond-Centrifuge		per bone dry	ton			Global Dewatering
Water Treatment						
Flow Rate	395	gpm				assume operate 24/7
Unit, Purchase	\$691,235					pj
Water Treatment (Including Operator)		per 1,000 gal	lons			
Water Treatment QA		per day				
Flow Rate (mechanical dewatering)		gpm				pj
Unit, Purchase (mechanical dewatering)	\$780,778	LS				pj, 1 sample/day

Disposal		
Off-Site Disposal		
Load Soil for Hauling \$2.80	per ton	pj
Round-trip Hauling 2	hours	pj
Round-trip Hauling (to Vitrification Facility) 0.5	hours	pj
Tipping Fee (non-TSCA) \$43	per ton	St. Paul
Tipping Fee (TSCA) \$55	per ton	St. Paul
Truck Rate \$75	per hour	pj
Truck Load 32	tons	pj
Institutional Controls		
Public Education Program \$100,000		pj
O&M Plans \$20,000		pj
Deed Restrictions \$5,000		pj
Annual Costs		
Public Education Program \$30,000		pj
Maintaining O&M Plans \$800		pj
Reporting \$20,000		pj
Long-term Monitoring \$600,000		Anne LTM
Long-term Monitoring (no action) \$300,000		Anne LTM

ALTERNATIVE A: No Action

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions	Quantity 1	Units LS		Cost \$5,000
Direct Capital: Engineering, Procure	ement & Construction Manageme	ent:		\$5,000 600
Total Capital:				\$5,600
Present Worth of Longer Term Opera Long-term Monitoring (no action)	ating Costs	Years 40	Annual Cost \$300,000	\$4,513,889
Total Present Worth,	Longer Term O&M Costs			\$4,513,889
Total Project Capits	al and O&M Cost			\$4,500,000

ALTERNATIVE B: Monitored Natural Recovery

MONITORING/INSTITUTIONAL CONTROLS

Capital Items	Quantity	Units		Cost
Public Education Program	1	LS		\$100,000
O&M Plans	1	LS		\$20,000
Deed Restrictions	1	LS		\$5,000
Direct Capital:				\$125,000
Engineering, Procurement	t & Construction Managem	ent:		15,000
Total Capital:				\$140,000
Present Worth of Longer Term Operating	Costs	Years	Annual Cost	
Long-term Monitoring		40	\$600,000	\$9,027,778
Public Education Program		40	\$30,000	\$451,389
Maintaining O&M Plans		40	\$800	\$12,037
Reporting		40	\$20,000	\$300,926
Total Present Worth, Long	ger Term O&M Costs			\$9,792,130
Total Project Capital an	d O&M Cost			\$9,900,000

ALTERNATIVE C: Dredge Sediment With Off-site Disposal

Capital Items	Quantity	Units		Cost
Site Preparation	5	Each		\$500,000
Mobilization - Equipment and Silt Curtain	5	LS		\$850,000
Debris Sweep	73	ac		\$1,168,000
Dredging - 12 hour shifts	77	Day	0.592307692	\$438,900
Dredge Monitoring (Water Quality)	77	Day		\$231,000
Sediment Removal QA	77	Day		\$92,400
Site Restoration	5	Each		\$3,000,000
Direct Capital:				\$6,280,300
Engineering, Procurement & Co	onstruction Managem	ent:		753,636
Contractor Overhead/Profit:				942,045
Total Capital:				\$8,000,000

SEDIMENT DEWATERING (GRAVITY)

	SEDIMI	ENIDEWAI	EKING (GN	AVIII)	
Capital Items		Quantity	Units		Cost
Land Lease or Purchase		608,771	sf		\$1,095,788
Mobilization		1	LS		\$20,000
Clear and Grub		608,771	sf		\$27,951
Berm Construction		32,365	cy		\$194,193
Rough Grading Liner Placement		608,771 608,771	sf sf		\$152,193 \$913,157
Demob/Disposal		1	LS		\$10,000
Regrade		32,365	cy		\$194,193
Seed/Sod		67,641	sy		\$67,641
	Direct Capital:				\$2,675,115
	Engineering, Procurement & Constr	uction Managem	ent:		321,014
	Engineering, Frocurement & Const	action managem	ent.		321,014
	Total Canital				£3 000 000
	Total Capital:				\$3,000,000
		WATER TR	EATMENT		
					_
Capital Items		Quantity	Units		Cost
Unit Purchase	1.0.4	395	gpm		\$691,235
Water Treatment (Include	des Operator)	61,139,879	gal		\$24,456
Water Treatment QA		108	day		\$21,600
	Direct Capital:				\$737,291
			4-		
	Engineering, Procurement & Constr	uction Managem	ent:		88,475
	Total Capital:				\$800,000
	CEDIMENT DICEOCA	L (Evisting NI	D 500 Comm	onsial Disposal Facility)	
	SEDIMENT DISPOSAL	L (Existing N	K 500 Comm	terciai Disposai Facility)	
Capital Items		Quantity	Units		Cost
Solidification		95,673	ton		\$2,391,825
Lime Purchase		9,568	ton		\$574,080
Soil Loading		95,673	ton		\$267,884
Soil Hauling		95,673	ton		\$448,467
Tipping Fees (non-TSC)	A)	95,673	ton		\$4,113,939
ripping rees (non-13C.	A)	93,073	ton		94,113,737
	Direct Capital:				\$7,796,196
	Engineering, Procurement & Constr	uction Manageme	ent:		935,543
	Engineering, Frocurement & Consu	uction ivianagem	ciit.		755,545
	Total Capital:				\$8,700,000
	I	NSTITUTIO	NAL CONT	ROLS	
Capital Items		Quantity	Units		Cost
Deed Restrictions		1	LS		\$5,000
	Direct Capital:				\$5,000
	Engineering, Procurement & Constr	uction Manageme	ent:		600
	Total Capital:				\$5,600
Drosont Worth -	f Longer Term Operating Costs		Voors	Annual Coct	
Long-term Monitoring (Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term (AM Costs			\$4,513,889
	Total Project Capital and O&M C	Cost			\$4,500,000
	TOTAL COST				625 000 000
	TOTAL COST				\$25,000,000

ALTERNATIVE E: Dredge Sediment and Thermal Treatment

Capital Items		Quantity	Units		Cost
Site Preparation		5	Each		\$500,000
Mobilization - Equipme	ent and Silt Curtain	5	LS		\$850,000
Debris Sweep		73	ac		\$1,168,000
Dredging - 12 hour shift	ts	77	Day	0.592307692	\$438,900
Dredge Monitoring (Wa	nter Quality)	77	Day		\$231,000
Sediment Removal QA		77	Day		\$92,400
Site Restoration		5	Each		\$3,000,000
	Direct Capital:				\$6,280,300
	Engineering, Procurement &	Construction Managem	ent:		753,636
	Contractor Overhead/Profit:	_			942,045
	Total Capital:				\$8,000,000
	SE	EDIMENT DEWAT	TERING (GF	RAVITY)	
Canital Itams		Quantity	Units		Cost
Capital Items Land Lease or Purchase		Quantity 608,771	sf		Cost \$1,095,788
Mobilization		1	LS		\$20,000
Clear and Grub		608,771	sf		\$27,951
Berm Construction		32,365	cy		\$194,193
Rough Grading		608,771	sf		\$152,193
Liner Placement		608,771	sf		\$913,157
Demob/Disposal		1	LS		\$10,000
Regrade Seed/Sod		32,365 67,641	cy		\$194,193 \$67,641
Seed/Sod		07,041	sy		307,041
	Direct Capital:				\$2,675,115
	Engineering, Procurement &	Construction Managem	ant:		321,014
	Engineering, Frocurement &	Construction ivianagem	ciit.		321,014
	Total Capital:				\$3,000,000
		WATED TO	DE A TEMPENIT		
		WATERTR	REATMENT		
Capital Items		Quantity	Units		Cost
Unit Purchase Water Treatment (Include	das Onaratar)	395 61,139,879	gpm		\$691,235 \$24,456
Water Treatment (Include	ues Operator)	108	gal day		\$24,436 \$21,600
water Treatment Q71		100	day		Ψ21,000
	Direct Capital:				\$737,291
	Engineering, Procurement &	Construction Managem	ent:		88,475
	ingineering, i rocurement ce	Constitution Managem			
	Total Capital:				\$800,000
	-	ENT (VITRIFICA	TION 1x250	tons Integrated Storage Uni	
Capital Items		Quantity	Units		Cost
Sediment Treatment		95,673	ton		\$2,583,165
Soil Loading		95,673	ton		\$267,884
Soil Hauling		95,673	ton		\$112,117
	Direct Capital:				\$2,963,165
	Engineering, Procurement &	Construction Managem	ent:		\$444,475
	Total Capital:				\$3,400,000
		INSTITUTIO	NAL CONT	ROLS	
Capital Items		Quantity	Units		Cost
Deed Restrictions		1	LS		\$5,000
	Direct Capital:	a			\$5,000
	Engineering, Procurement &	Construction Managem	ent:		600
	Total Capital:				\$5,600
	f Longer Term Operating Co	osts	Years	Annual Cost	
Long-term Monitoring ((no action)		40	\$300,000	\$4,513,889
	Total Present Worth, Longer	Term O&M Costs			\$4,513,889
		5 200			Ψ1,515,007
	Total Project Capital and C	D&M Cost			\$4,500,000
	TOTAL COST				\$19,700,000
					4,,,,,,,,

BASIS FOR PRELIMINARY COST ESTIMATES

SEDIMENT REMEDIATION

FOX RIVER, WISCONSIN

APPLETON TO LITTLE RAPIDS

Action Level - 500 ppb

Material Handling Assumptions:	57,000	40	42.5102	A
Volume > 500 ppb Volume > 125 ppb	56,998 182,450	-	43,510 m3 139,275 m3	Acres corresponds to dredge footprint area
Volume > 125 ppb Volume > 250 ppb	80,611	-	61,535 m3	тоогринг агеа
Volume > 1,000 ppb	46,178	-	35,250 m3	
Volume > 5000 ppb	20,148		15,380 m3	
Volume > 50,000 ppb		cy	0 m3	
Solids Specific Gravity	2.4			
Fresh Water Density		lb/ft3		
In Situ Density	24.2%		0.98 tons per cy	
Slurry Density (20% in situ)	5.5%		0.87 tons per cy	Ogden Beeman
Dewatered Density		w/w 9.4% v/v	0.95 tons per cy	Montgomery Watson
Dewatered Density (mechanical and CDF) Treated Density	93.5%	w/w 29.4% v/v w/w 60.0% v/v	1.19 tons per cy	Foth & VanDyke
HTTD Treatment Capacity	1,264,377		1.30 tons per cy 1,650,000 tons	
Vitrification Treatment Capacity	1,328,888		2145500.00 tons	
	,,	,		
Cost Estimating Parameters & Methodology:				
Interest Rate	6.0%			M - H - 1
Sales Tax	5.5% 12.0%			Not Used
Engineering, Procurement and Construction Mgmt Contractor Overhead and Profit - Dredging Only	15.0%			
Dredging	15.0%			
Debris Sweep	\$16,000	ner acre		Ogden Beeman
Dredge Monitoring (Water Quality)		per day		oguen Beenium
Sediment Removal QA		per day		
Hydraulic - 10-inch Cutterhead				
Site Preparation	\$100,000	per dredge launch site		pj
Mobilization - Equipment	\$135,000	per dredge		Ogden Beeman
Mobilization - Silt Curtain	\$35,000			Ogden Beeman
Shift Rate (10 hours)		per shift		Ogden Beeman
Dredge Rate		cy in situ per 10 hour shift		Ogden Beeman
Site Restoration	\$600,000	per dredge launch site		pj
High Temperature Thermal Desorption	650,000			_:
Setup Staging Area Mobilization/Site Prep	\$50,000 \$150,000			pj Movemillion
Sediment Treatment QA		per ton		Maxymillian
Ratio of Amending Sand Volume to Dredge Vol.	0.25			
Sand Purchase and Deliver		per ton		Ole
Blending		per ton		Ole
HTTD (includes off-gas treatment)		per ton		Maxymillian
Stack Testing	\$50,000	LS		Maxymillian
Place Treated Material	\$3	per ton		
Solidification				
Percent Lime		(w/w)		Montgomery Watson
Lime	\$60	per ton Mixing	\$25 per ton	pj, pug mill mixing
Vitrification Vitrification	\$27.0	nor ton (250 aloss ton nor day n	actor unit	Unit Coat Study, Minaray
Dewatering - Upland Pond (2 cells)	\$27.0	per ton (250 glass ton per day m	letter tilit)	Unit Cost Study- Minergy
Land Lease or Purchase	\$1.80	per sf		Ole
Area	608,771		3	2 days slurry + 13 wk solids * 2 cell
Perimeter	3,121			assume square
Depth of Material in Dewatering Cell	8	feet		based on size at Arrowhead Park
Cell Retention Time	24	hours		Not Used
Cell Depth		feet		
Mobilization	\$20,000			pj
Clear and Grub		per acre		pj
Berm Volume		cy per lf		2:1 slope, 8-foot top
Berm Construction		per cy		pj :
Rough Grading		per sf per sf		pj pj, 2 2-inch lifts
Asphalt Liner Demob/Disposal	\$10,000			pj, 2 2-men mts pj
		per cy		pj
Regrade Berm Soils		per sy		Baird
Regrade Berm Soils Seed/Sod	\$1			
Regrade Berm Soils Seed/Sod Dewatering - Mechanical	\$1	1		
Seed/Sod	\$1 \$100,000			pj
Seed/Sod Dewatering - Mechanical Mobilization Holding Pond-Centrifuge	\$100,000	per bone dry ton		pj Global Dewatering
Seed/Sod Dewatering - Mechanical Mobilization Holding Pond-Centrifuge Water Treatment	\$100,000 \$80	per bone dry ton		Global Dewatering
Seed/Sod Dewatering - Mechanical Mobilization Holding Pond-Centrifuge Water Treatment Flow Rate	\$100,000 \$80	per bone dry ton		Global Dewatering assume operate 24/7
Seed/Sod Dewatering - Mechanical Mobilization Holding Pond-Centrifuge Water Treatment Flow Rate Unit, Purchase	\$100,000 \$80 395 \$691,235	per bone dry ton gpm LS		Global Dewatering
Seed/Sod Dewatering - Mechanical Mobilization Holding Pond-Centrifuge Water Treatment Flow Rate Unit, Purchase Water Treatment (Including Operator)	\$100,000 \$80 395 \$691,235 \$0.40	per bone dry ton gpm LS per 1,000 gallons		Global Dewatering assume operate 24/7
Seed/Sod Dewatering - Mechanical Mobilization Holding Pond-Centrifuge Water Treatment Flow Rate Unit, Purchase Water Treatment (Including Operator) Water Treatment QA	\$100,000 \$80 395 \$691,235 \$0.40 \$200	per bone dry ton gpm LS per 1,000 gallons per day		Global Dewatering assume operate 24/7 pj
Seed/Sod Dewatering - Mechanical Mobilization Holding Pond-Centrifuge Water Treatment Flow Rate Unit, Purchase Water Treatment (Including Operator)	\$100,000 \$80 395 \$691,235 \$0.40 \$200	per bone dry ton gpm LS per 1,000 gallons per day gpm		Global Dewatering assume operate 24/7

Disposal			
Off-Site Disposal			
Load Soil for Hauling	\$2.80	per ton	pj
Round-trip Hauling	2	hours	pj
Round-trip Hauling (to Vitrification Facility)	0.5	hours	pj
Tipping Fee (non-TSCA)	\$43	per ton	St. Paul
Tipping Fee (TSCA)	\$55	per ton	St. Paul
Truck Rate	\$75	per hour	pj
Truck Load	32	tons	pj
Institutional Controls			
Public Education Program	\$100,000		pj
O&M Plans	\$20,000		pj
Deed Restrictions	\$5,000		pj
Annual Costs			
Public Education Program	\$30,000		pj
Maintaining O&M Plans	\$800		pj
Reporting	\$20,000		pj
Long-term Monitoring	\$600,000		Anne LTM
Long-term Monitoring (no action)	\$300,000		Anne LTM

ALTERNATIVE A: No Action

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
Direct Capital: Engineering, Procurement & Construction Management:					\$5,000 600
To	otal Capital:				\$5,600
	Present Worth of Longer Term Operating Costs Years Annual Cost Long-term Monitoring (no action) 40 \$300,000				\$4,513,889
То	stal Present Worth, Longer Term O&	kM Costs			\$4,513,889
To	otal Project Capital and O&M Cos	st			\$4,500,000

ALTERNATIVE B: Monitored Natural Recovery

MONITORING/INSTITUTIONAL CONTROLS

Capital Items	Quantity	Units		Cost
Public Education Program	1	LS		\$100,000
O&M Plans	1	LS		\$20,000
Deed Restrictions	1	LS		\$5,000
Direct Capital:				\$125,000
Engineering, Procurement	t & Construction Managem	ent:		15,000
Total Capital:				\$140,000
Present Worth of Longer Term Operating	Costs	Years	Annual Cost	
Long-term Monitoring		40	\$600,000	\$9,027,778
Public Education Program		40	\$30,000	\$451,389
Maintaining O&M Plans		40	\$800	\$12,037
Reporting		40	\$20,000	\$300,926
Total Present Worth, Long	ger Term O&M Costs			\$9,792,130
Total Project Capital an	d O&M Cost			\$9,900,000

ALTERNATIVE C: Dredge Sediment With Off-site Disposal

Capital Items	Quantity	Units		Cost
Site Preparation	5	Each		\$500,000
Mobilization - Equipment and Silt Curtain	5	LS		\$850,000
Debris Sweep	48	ac		\$768,000
Dredging - 12 hour shifts	55	Day	0.423076923	\$313,500
Dredge Monitoring (Water Quality)	55	Day		\$165,000
Sediment Removal QA	55	Day		\$66,000
Site Restoration	5	Each		\$3,000,000
Direct Capital:				\$5,662,500
Engineering, Procurement & Con	nstruction Managem	ent:		679,500
Contractor Overhead/Profit:				849,375
Total Capital:				\$7,200,000

SEDIMENT DEWATERING (GRAVITY)

	SEDIM	ENI DEWAI	EKING (GN	AAVIII)	
Capital Items		Quantity	Units		Cost
Land Lease or Purchase	e	608,771	sf		\$1,095,788
Mobilization		1	LS		\$20,000
Clear and Grub		608,771	sf		\$27,951
Berm Construction		32,365	cy		\$194,193
Rough Grading Liner Placement		608,771 608,771	sf sf		\$152,193 \$913,157
Demob/Disposal		1	LS		\$10,000
Regrade		32,365	cy		\$194,193
Seed/Sod		67,641	sy		\$67,641
	Direct Capital:				\$2,675,115
	Engineering, Procurement & Constr	ruction Managem	ent:		321,014
	Total Capital:				\$3,000,000
		WARDD ID	E A TEN CENTE		
		WATER TR	EATMENT		
Capital Items		Quantity	Units		Cost
Unit Purchase		395	gpm		\$691,235
Water Treatment (Inclu	ides Operator)	43,230,619	gal		\$17,292
Water Treatment QA		76	day		\$15,200
	Direct Capital:				\$723,728
	Engineering, Procurement & Consti	ruction Managem	ent:		86,847
	Total Capital:				\$800,000
	SEDIMENT DISPOSA	I (Evicting N	P 500 Comm	nercial Disposal Facility)	
	SEDIMENT DISTOSA	L (LAISTING IV	K 300 Comm	terciai Disposai Facinty)	
Capital Items		Quantity	Units		Cost
Solidification		67,649	ton		\$1,691,225
Lime Purchase		6,765	ton		\$405,900
Soil Loading		67,649	ton		\$189,417
Soil Hauling		67,649	ton		\$317,105
Tipping Fees (non-TSC	CA)	67,649	ton		\$2,908,907
11 0 (,				
	Direct Capital:				\$5,512,554
	Engineering, Procurement & Constr	ruction Managem	ent:		661,506
	Engineering, 1 rocurement & Consu	ruction managem	ciit.		001,300
	Total Capital:				\$6,200,000
		INSTITUTI	ONAL CON	TROLS	
a		0	WY *-		~ :
Capital Items		Quantity	Units		Cost
Deed Restrictions		1	LS		\$5,000
	Direct Capital:				\$5,000
	Engineering, Procurement & Consti	ruction Managem	ent:		600
	Total Capital:				\$5,600
Present Worth o	of Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring	(no action)		40	\$300,000	\$4,513,889
	Total Present Worth, Longer Term	O&M Costs			\$4,513,889
	Total Project Capital and O&M (Cost			\$4,500,000
	· · · · · · · · · · · · · · · · · · ·				- / /***
	TOTAL COST				\$21,700,000

ALTERNATIVE E: Dredge Sediment and Thermal Treatment

Capital Items		Quantity	Units		Cost
Site Preparation		5	Each		\$500,000
Mobilization - Equipme	ent and Silt Curtain	5	LS		\$850,000
Debris Sweep		48	ac		\$768,000
Dredging - 12 hour shift	ts	55	Day	0.423076923	\$313,500
Dredge Monitoring (Wa	nter Quality)	55	Day		\$165,000
Sediment Removal QA		55	Day		\$66,000
Site Restoration		5	Each		\$3,000,000
	Direct Conital:				\$5,662,500
	Direct Capital: Engineering, Procurement &	Construction Managem	ant:		\$5,662,500 679,500
	Contractor Overhead/Profit:	Construction Managem	ciit.		849,375
	Total Capital:				\$7,200,000
	-	DIMENT DEWAT	ERING (GF	RAVITY)	, , , , , , ,
Capital Items		Quantity	Units sf		Cost
Land Lease or Purchase Mobilization		608,771 1	LS		\$1,095,788 \$20,000
Clear and Grub		608,771	sf		\$20,000 \$27,951
Berm Construction		32,365	cy		\$194,193
Rough Grading		608,771	sf		\$152,193
Liner Placement		608,771	sf		\$913,157
Demob/Disposal		1	LS		\$10,000
Regrade		32,365	cy		\$194,193
Seed/Sod		67,641	sy		\$67,641
	Direct Capital:				\$2,675,115
	Engineering, Procurement &	Construction Managem	ent:		321,014
	Total Capital:				\$3,000,000
		WATER TR	REATMENT		
Capital Items		Quantity	Units		Cost
Unit Purchase	1 0 ()	395	gpm		\$691,235
Water Treatment (Include	des Operator)	43,230,619	gal		\$17,292
Water Treatment QA		76	day		\$15,200
	Direct Capital:				\$723,728
	Engineering, Procurement &	Construction Managem	ent:		86,847
	<i>c c</i> ,				· · · · · · · · · · · · · · · · · · ·
	Total Capital:	ENT (VITDIEICA)	TION 1+250	tons Integrated Storage Unit	\$800,000
	SEDIMENT TREATM	ENI (VII KIFICA	110N 1X250	tons integrated Storage Unit	.)
Capital Items		Quantity	Units		Cost
Sediment Treatment		67,648	ton		\$1,826,497
Soil Loading		67,648	ton		\$189,415
Soil Hauling		67,648	ton		\$79,275
· ·	Direct Capital:				\$2,095,187
	Engineering, Procurement &	Construction Managem	ent:		\$314,278
	Total Capital:				\$2,400,000
		INSTITUTI	ONAL CON	TROLS	
Capital Items		Quantity	Units		Cost
Deed Restrictions		1	LS		\$5,000
	Direct Capital: Engineering, Procurement &	Construction Managem	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth o	f Longer Term Operating Co	sts	Years	Annual Cost	
Long-term Monitoring (·		40	\$300,000	\$4,513,889
	Total Present Worth, Longer	Term O&M Costs			\$4,513,889
	Total Project Capital and C	0&M Cost			\$4,500,000
	TOTAL COST				\$17,900,000

BASIS FOR PRELIMINARY COST ESTIMATES

SEDIMENT REMEDIATION

FOX RIVER, WISCONSIN APPLETON TO LITTLE RAPIDS

Action Level - 1,000 ppb

Maderial Hamilton Assessed				
Material Handling Assumptions: Volume > 1000 ppb	46,178	cy 34 ac	35,250 m3	Acres corresponds to dredge
Volume > 125 ppb	182,450		139.275 m3	footprint area
Volume > 250 ppb	80,611	The state of the s	61.535 m3	lootprint area
Volume > 500 ppb	56,998		43,510 m3	
Volume > 5000 ppb	20,148	The state of the s	15,380 m3	
Volume > 50,000 ppb		cy	0 m3	
Solids Specific Gravity	2.4	Í		
Fresh Water Density	62.4	lb/ft3		
In Situ Density	24.2%	w/w 11.7% v/v	0.98 tons per cy	
Slurry Density (20% in situ)	5.5%	w/w 2.3% v/v	0.87 tons per cy	Ogden Beeman
Dewatered Density	20%	w/w 9.4% v/v	0.95 tons per cy	Montgomery Watson
Dewatered Density (mechanical and CDF)	50%	w/w 29.4% v/v	1.19 tons per cy	Foth & VanDyke
Treated Density	93.5%	w/w 60.0% v/v	1.30 tons per cy	
HTTD Treatment Capacity	1,264,377	•	1,650,000 tons	
Vitrification Treatment Capacity	1,328,888	cy in situ	2145500.00 tons	
Cost Estimating Parameters & Methodology:				
Interest Rate	6.0%			
Sales Tax	5.5%			Not Used
Engineering, Procurement and Construction Mgmt	12.0%			
Contractor Overhead and Profit - Dredging Only	15.0%			
Dredging				
Debris Sweep	\$16,000	per acre		Ogden Beeman
Dredge Monitoring (Water Quality)	\$3,000	per day		•
Sediment Removal QA	\$1,200	per day		
Hydraulic - 10-inch Cutterhead				
Site Preparation	\$100,000	per dredge launch site		pj
Mobilization - Equipment		per dredge		Ogden Beeman
Mobilization - Silt Curtain	\$35,000			Ogden Beeman
Shift Rate (10 hours)	\$5,700	per shift		Ogden Beeman
Dredge Rate		cy in situ per 10 hour shift		Ogden Beeman
Site Restoration		per dredge launch site		pj
High Temperature Thermal Desorption				
Setup Staging Area	\$50,000			pj
Mobilization/Site Prep	\$150,000			Maxymillian
Sediment Treatment QA	\$2	per ton		·
Ratio of Amending Sand Volume to Dredge Vol.	0.25	:1		
Sand Purchase and Deliver	\$6	per ton		Ole
Blending	\$25	per ton		Ole
HTTD (includes off-gas treatment)	\$75	per ton		Maxymillian
Stack Testing	\$50,000	LS		Maxymillian
Place Treated Material	\$3	per ton		
Solidification				
Percent Lime		(w/w)		Montgomery Watson
Lime	\$60	per ton Mixing	\$25 per ton	pj, pug mill mixing
Vitrification				
Vitrification	\$27.0	per ton (250 glass ton per day melte	er unit)	Unit Cost Study- Minergy
Dewatering - Upland Pond (2 cells)		_		
Land Lease or Purchase		per sf		Ole
Area	608,771			2 days slurry + 13 wk solids * 2 cell
Perimeter	3,121			assume square
Depth of Material in Dewatering Cell		feet		based on size at Arrowhead Park
Cell Retention Time		hours		Not Used
Cell Depth		feet		-:
Mobilization	\$20,000			pj
Clear and Grub Berm Volume		per acre		pj 2:1 slone 8 foot ton
		cy per lf		2:1 slope, 8-foot top
Berm Construction		per cy		pj
Rough Grading Asphalt Liner		per sf		pj
1	\$1.50 \$10,000	per sf		pj, 2 2-inch lifts
Demob/Disposal Regrade Berm Soils				pj
Seed/Sod		per cy per sy		pj Baird
Dewatering - Mechanical	\$1	per sy		Ballu
Mobilization	\$100,000			ni
Holding Pond-Centrifuge		per bone dry ton		pj Global Dewatering
Water Treatment	\$60	per cone dry ton		Global Dewalering
Flow Rate	305	gpm		assume operate 24/7
Unit, Purchase	\$691,235	C1		pj
Water Treatment (Including Operator)		per 1,000 gallons		k)
Water Treatment QA		per day		
Flow Rate (mechanical dewatering)		gpm		pj
Unit, Purchase (mechanical dewatering)	\$780,778			pj, 1 sample/day
, r are insertant de matering)	\$700,770			pj, i sumpresauj

Disposal		
Off-Site Disposal		
Load Soil for Hauling \$2.80	per ton	pj
Round-trip Hauling 2	hours	pj
Round-trip Hauling (to Vitrification Facility) 0.5	hours	pj
Tipping Fee (non-TSCA) \$43	per ton	St. Paul
Tipping Fee (TSCA) \$55	per ton	St. Paul
Truck Rate \$75	per hour	pj
Truck Load 32	tons	pj
Institutional Controls		
Public Education Program \$100,000		pj
O&M Plans \$20,000		pj
Deed Restrictions \$5,000		pj
Annual Costs		
Public Education Program \$30,000		pj
Maintaining O&M Plans \$800		pj
Reporting \$20,000		pj
Long-term Monitoring \$600,000		Anne LTM
Long-term Monitoring (no action) \$300,000		Anne LTM

ALTERNATIVE A: No Action

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions	Quantity 1	Units LS		Cost \$5,000
Direct Capital: Engineering, Procure	ement & Construction Manageme	ent:		\$5,000 600
Total Capital:				\$5,600
Present Worth of Longer Term Operating Costs Years Annual Cost Long-term Monitoring (no action) 40 \$300,000				\$4,513,889
Total Present Worth,	Longer Term O&M Costs			\$4,513,889
Total Project Capits	al and O&M Cost			\$4,500,000

ALTERNATIVE B: Monitored Natural Recovery

MONITORING/INSTITUTIONAL CONTROLS

Capital Items	Quantity	Units		Cost
Public Education Program	1	LS		\$100,000
O&M Plans	1	LS		\$20,000
Deed Restrictions	1	LS		\$5,000
Direct Capital:				\$125,000
Engineering, Procurement	& Construction Managem	ent:		15,000
Total Capital:				\$140,000
Present Worth of Longer Term Operating	Costs	Years	Annual Cost	
Long-term Monitoring		40	\$600,000	\$9,027,778
Public Education Program		40	\$30,000	\$451,389
Maintaining O&M Plans		40	\$800	\$12,037
Reporting		40	\$20,000	\$300,926
Total Present Worth, Long	er Term O&M Costs			\$9,792,130
Total Project Capital and	l O&M Cost			\$9,900,000

ALTERNATIVE C: Dredge Sediment With Off-site Disposal

Capital Items	Quantity	Units		Cost
Site Preparation	5	Each		\$500,000
Mobilization - Equipment and Silt Curtain	5	LS		\$850,000
Debris Sweep	34	ac		\$544,000
Dredging - 12 hour shifts	44	Day	0.338461538	\$250,800
Dredge Monitoring (Water Quality)	44	Day		\$132,000
Sediment Removal QA	44	Day		\$52,800
Site Restoration	5	Each		\$3,000,000
Direct Capital:				\$5,329,600
Engineering, Procurement & C	onstruction Managem	ent:		639,552
Contractor Overhead/Profit:				799,440
Total Capital:				\$6,800,000

SEDIMENT DEWATERING (GRAVITY)

	SEDIM	ENI DEWAI	EKING (GK	AVIII)	
Capital Items		Quantity	Units		Cost
Land Lease or Purchase		608,771	sf		\$1,095,788
Mobilization		1	LS		\$20,000
Clear and Grub		608,771	sf		\$27,951
Berm Construction		32,365	cy		\$194,193
Rough Grading Liner Placement		608,771 608,771	sf sf		\$152,193 \$913,157
Demob/Disposal		1	LS		\$10,000
Regrade		32,365	cy		\$194,193
Seed/Sod		67,641	sy		\$67,641
	Direct Capital:				\$2,675,115
	Engineering, Procurement & Constr	uction Managem	ent:		321,014
	Total Capital:				\$3,000,000
	тогат Сариат.				33,000,000
		WATED TO	E A TIMENIT		
		WATER TR	EAINENI		
Capital Items		Quantity	Units		Cost
Unit Purchase		395	gpm		\$691,235
Water Treatment (Inclu	des Operator)	35,023,657	gal		\$14,009
Water Treatment QA		62	day		\$12,400
	Direct Capital:				\$717,645
	Engineering, Procurement & Constr	ruction Managem	ent:		86,117
	Total Capital:				\$800,000
	Total Capital.				3000,000
	SEDIMENT DISPOSA	L (Existing N	R 500 Comm	ercial Disposal Facility)	
Capital Items		Quantity	Units		Cost
Solidification		54,806	ton		\$1,370,150
Lime Purchase		5,481	ton		\$328,860
Soil Loading		54,806	ton		\$153,457
Soil Hauling		54,806	ton		\$256,903
Tipping Fees (non-TSC	A)	54,806	ton		\$2,356,658
	Direct Capital:				\$4,466,028
	Engineering, Procurement & Constr	uction Managem	ent:		535,923
	Total Capital:				\$5,000,000
]	INSTITUTIO	NAL CONT	ROLS	
Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Pi - (0): 1				45.000
	Direct Capital: Engineering, Procurement & Constr	ruction Managem	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth of Long-term Monitoring (f Longer Term Operating Costs		Years 40	Annual Cost \$300,000	\$4,513,889
Zong term momtering (00110		<i>\$500,000</i>	
	Total Present Worth, Longer Term				\$4,513,889
	Total Project Capital and O&M (Cost			\$4,500,000
	TOTAL COST				\$20,100,000

ALTERNATIVE E: Dredge Sediment and Thermal Treatment

Capital Items		Quantity	Units		Cost
Site Preparation		5	Each		\$500,000
Mobilization - Equipme	ent and Silt Curtain	5	LS		\$850,000
Debris Sweep		34	ac		\$544,000
Dredging - 12 hour shift	ts	44	Day	0.338461538	\$250,800
Dredge Monitoring (W	ater Quality)	44	Day		\$132,000
Sediment Removal QA		44	Day		\$52,800
Site Restoration		5	Each		\$3,000,000
	Direct Capital:				\$5,329,600
	Engineering, Procurement & Contractor Overhead/Profit		ent:		639,552
	Contractor Overnead/Profit				799,440
	Total Capital:				\$6,800,000
	•	EDIMENT DEWAT	ERING (GF	RAVITY)	**,***,***
			`	,	
Capital Items		Quantity	Units		Cost
Land Lease or Purchase	e	608,771	sf		\$1,095,788
Mobilization		1	LS		\$20,000
Clear and Grub		608,771	sf		\$27,951
Berm Construction		32,365	cy		\$194,193
Rough Grading		608,771	sf		\$152,193
Liner Placement		608,771 1	sf LS		\$913,157
Demob/Disposal		32,365			\$10,000 \$194,193
Regrade Seed/Sod		67,641	cy sy		\$67,641
Seed/Sod		07,041	sy		307,041
	Dinant Canitals				\$2 (75 115
	Direct Capital:				\$2,675,115
	Engineering, Procurement &	& Construction Managem	ent:		321,014
	Total Capital:				\$3,000,000
					,*,***
		WATER TR	EATMENT		
Capital Items		Quantity	Units		Cost
Unit Purchase	1.0	395	gpm		\$691,235
Water Treatment (Inclu	des Operator)	35,023,657	gal		\$14,009
Water Treatment QA		62	day		\$12,400
	Direct Capital:				\$717,645
	Engineering, Procurement &	construction Managem	ent:		86,117
	Total Capital:				\$800,000
	SEDIMENT TREATM	IENT (VITRIFICA	ΓΙΟΝ 1x250	tons Integrated Storage Unit)
Capital Items		Quantity	Units		Cost
Sediment Treatment		54,806	ton		\$1,479,752
Soil Loading		54,806	ton		\$153,456
Soil Hauling		54,806	ton		\$64,225
	Direct Capital:				\$1,697,433
	Engineering, Procurement &	& Construction Managem	ent:		\$254,615
	Total Capital:				\$2,000,000
	-	INSTITUTIO	NAL CONT	ROLS	
			00111		
Capital Items		Quantity	Units		Cost
Deed Restrictions		1	LS		\$5,000
	Direct Capital:				\$5,000
	Engineering, Procurement &	& Construction Managem	ent:		600
	Total Canital				\$5,600
	Total Capital:				33,000
Present Worth o	of Longer Term Operating C	osts	Years	Annual Cost	
Long-term Monitoring			40	\$300,000	\$4,513,889
				-	
	Total Present Worth, Longe	r Term O&M Costs			\$4,513,889
	Total Project Capital and	O&M Cost			\$4,500,000
	TOTAL COST				\$17,100,000
	1011IL CO01				917,100,000

BASIS FOR PRELIMINARY COST ESTIMATES

SEDIMENT REMEDIATION

FOX RIVER, WISCONSIN

APPLETON TO LITTLE RAPIDS Action Level - 5,000 ppb

Material Handling Assumptions:	20.140	12	15 200 2	
Volume > 5000 ppb Volume > 125 ppb	20,148 182,450		15,380 m3 139,275 m3	Acres corresponds to dredge footprint area
Volume > 123 ppb Volume > 250 ppb	80,611		61,535 m3	lootprint area
Volume > 500 ppb	56,998	-	43,510 m3	
Volume > 1000 ppb	46,178		35,250 m3	
Volume > 50,000 ppb		cy	0 m3	
Solids Specific Gravity	2.4			
Fresh Water Density		lb/ft3		
In Situ Density	24.2%		0.98 tons per cy	
Slurry Density (20% in situ)	5.5% 20%		0.87 tons per cy	Ogden Beeman Montgomery Watson
Dewatered Density Dewatered Density (mechanical and CDF)		w/w 9.4% v/v w/w 29.4% v/v	0.95 tons per cy 1.19 tons per cy	Foth & VanDyke
Treated Density	93.5%		1.19 tons per cy	rotii & vaiiDyke
HTTD Treatment Capacity	1,264,377		1,650,000 tons	
Vitrification Treatment Capacity	1,328,888		2145500.00 tons	
		•		
Cost Estimating Parameters & Methodology:				
Interest Rate	6.0%			XX . XX . 1
Sales Tax	5.5% 12.0%			Not Used
Engineering, Procurement and Construction Mgmt Contractor Overhead and Profit - Dredging Only	15.0%			
Dredging	15.0%			
Debris Sweep	\$16,000	per acre		Ogden Beeman
Dredge Monitoring (Water Quality)		per day		- 5
Sediment Removal QA		per day		
Hydraulic - 10-inch Cutterhead				
Site Preparation	\$100,000	per dredge launch site		pj
Mobilization - Equipment		per dredge		Ogden Beeman
Mobilization - Silt Curtain	\$35,000			Ogden Beeman
Shift Rate (10 hours)		per shift		Ogden Beeman
Dredge Rate		cy in situ per 10 hour shift		Ogden Beeman
Site Restoration	\$600,000	per dredge launch site		рj
High Temperature Thermal Desorption Setup Staging Area	\$50,000			ni
Mobilization/Site Prep	\$150,000			pj Maxymillian
Sediment Treatment QA		per ton		Maxyillillali
Ratio of Amending Sand Volume to Dredge Vol.	0.25			
Sand Purchase and Deliver		per ton		Ole
Blending	\$25	per ton		Ole
HTTD (includes off-gas treatment)	\$75	per ton		Maxymillian
Stack Testing	\$50,000			Maxymillian
Place Treated Material	\$3	per ton		
Solidification	10.00/			W
Percent Lime Lime		(w/w)	\$25 parton	Montgomery Watson
Vitrification	300	per ton Mixing	\$25 per ton	pj, pug mill mixing
Vitrification	\$27.0	per ton (250 glass ton per day m	elter unit)	Unit Cost Study- Minergy
Dewatering - Upland Pond (2 cells)	4=114	p (2 + + g		
Land Lease or Purchase	\$1.80	per sf		Ole
Area	608,771	sf 13.9754654	3	2 days slurry + 13 wk solids * 2 cell
Perimeter	3,121			assume square
Depth of Material in Dewatering Cell		feet		based on size at Arrowhead Park
Cell Retention Time		hours		Not Used
Cell Depth		feet		_:
Mobilization Clear and Grub	\$20,000	LS per acre		pj pi
Berm Volume		cy per lf		pj 2:1 slope, 8-foot top
Berm Construction		per cy		рј
Rough Grading	\$0.25			pj
Asphalt Liner	\$1.50			pj, 2 2-inch lifts
Demob/Disposal	\$10,000	LS		pj
Regrade Berm Soils	\$6	per cy		pj
Seed/Sod	\$1	per sy		Baird
Dewatering - Mechanical				
Mobilization	\$100,000	1 1 .		pj GLL ID
Holding Pond-Centrifuge	\$80	per bone dry ton		Global Dewatering
Water Treatment Flow Rate	205	anm		assume operate 24/7
Unit, Purchase	\$691,235	gpm I S		assume operate 24/7
Water Treatment (Including Operator)		per 1,000 gallons		pj
Water Treatment QA		per day		
Flow Rate (mechanical dewatering)		gpm		рј
Unit, Purchase (mechanical dewatering)	\$780,778			pj, 1 sample/day

Disposal		
Off-Site Disposal		
Load Soil for Hauling \$2.80	per ton	pj
Round-trip Hauling 2	hours	pj
Round-trip Hauling (to Vitrification Facility) 0.5	hours	pj
Tipping Fee (non-TSCA) \$43	per ton	St. Paul
Tipping Fee (TSCA) \$55	per ton	St. Paul
Truck Rate \$75	per hour	pj
Truck Load 32	tons	pj
Institutional Controls		
Public Education Program \$100,000		pj
O&M Plans \$20,000		pj
Deed Restrictions \$5,000		pj
Annual Costs		
Public Education Program \$30,000		pj
Maintaining O&M Plans \$800		pj
Reporting \$20,000		pj
Long-term Monitoring \$600,000		Anne LTM
Long-term Monitoring (no action) \$300,000		Anne LTM

ALTERNATIVE A: No Action

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Construc	ction Managemer	nt:		\$5,000 600
	Total Capital:				\$5,600
Present Worth of Long-term Monitoring	of Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term Od	&M Costs			\$4,513,889
	Total Project Capital and O&M Co	st			\$4,500,000

ALTERNATIVE B: Monitored Natural Recovery

MONITORING/INSTITUTIONAL CONTROLS

Capital Items	Quantity	Units		Cost
Public Education Program	1	LS		\$100,000
O&M Plans	1	LS		\$20,000
Deed Restrictions	1	LS		\$5,000
Direct Capital:				\$125,000
Engineering, Proc	urement & Construction Managem	ent:		15,000
Total Capital:				\$140,000
Present Worth of Longer Term Op	erating Costs	Years	Annual Cost	
Long-term Monitoring	_	40	\$600,000	\$9,027,778
Public Education Program		40	\$30,000	\$451,389
Maintaining O&M Plans		40	\$800	\$12,037
Reporting		40	\$20,000	\$300,926
Total Present Wor	th, Longer Term O&M Costs			\$9,792,130
Total Project Ca	pital and O&M Cost			\$9,900,000

ALTERNATIVE C: Dredge Sediment With Off-site Disposal

Capital Items	Quantity	Units		Cost
Site Preparation	5	Each		\$500,000
Mobilization - Equipment and Silt Curtain	5	LS		\$850,000
Debris Sweep	13	ac		\$208,000
Dredging - 12 hour shifts	20	Day	0.153846154	\$114,000
Dredge Monitoring (Water Quality)	20	Day		\$60,000
Sediment Removal QA	20	Day		\$24,000
Site Restoration	5	Each		\$3,000,000
Direct Capital:				\$4,756,000
Engineering, Procurement & C	Construction Managem	ent:		570,720
Contractor Overhead/Profit:				713,400
Total Capital:				\$6,000,000

SEDIMENT DEWATERING (GRAVITY)

	SEDIMI	ENI DEWAI	EKING (Gr	(AVIII)	
Capital Items		Quantity	Units		Cost
Land Lease or Purchase		608,771	sf		\$1,095,788
Mobilization		1	LS		\$20,000
Clear and Grub		608,771	sf		\$27,951
Berm Construction		32,365	cy		\$194,193
Rough Grading Liner Placement		608,771 608,771	sf sf		\$152,193 \$913,157
Demob/Disposal		1	LS		\$10,000
Regrade		32,365	cy		\$194,193
Seed/Sod		67,641	sy		\$67,641
	Direct Capital:				\$2,675,115
	Engineering, Procurement & Constr	uction Managem	ent.		321,014
	Engineering, Froedrement & Const	action managem	Ciit.		321,014
	Total Canital				\$2,000,000
	Total Capital:				\$3,000,000
		WATER TR	EATMENT		
Canital Itams		Quantity	Unito		Cost
Capital Items Unit Purchase		Quantity 395	Units		Cost \$691,235
Water Treatment (Inclu	des Operator)	15,281,244	gpm gal		\$6,112
Water Treatment QA	ues Operator)	27	day		\$5,400
water Treatment QA		21	day		\$5,700
	D' + C '+ I				0702.740
	Direct Capital:				\$702,748
	Engineering, Procurement & Constr	uction Managem	ent:		84,330
	Total Capital:				\$800,000
	SEDIMENT DISPOSA	L (Existing N	R 500 Comm	nercial Disposal Facility)	
Capital Items		Quantity	Units		Cost
Solidification		23,913	ton		\$597,825
Lime Purchase		2,392	ton		\$143,520
Soil Loading		23,913	ton		\$66,956
_		23,913	ton		\$112,092
Soil Hauling	140				
Tipping Fees (non-TSC	(A)	23,913	ton		\$1,028,259
	Direct Capital:				\$1,948,653
	Engineering, Procurement & Constr	uction Managem	ent:		233,838
	Engineering, i rocurement & Consu	uction ivianagem	ciit.		233,836
	Total Capital:				\$2,200,000
	1	NSTITUTIO	NAL CONT	ROLS	
Capital Items		Quantity	Units		Cost
Deed Restrictions		Quantity	LS		\$5,000
Deca restrictions		1	LS		ψ3,000
	Direct Capital:				\$5,000
	Engineering, Procurement & Constr	uction Managem	ent:		600
	T . 16				0 7 (00
	Total Capital:				\$5,600
	f Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring	(no action)		40	\$300,000	\$4,513,889
	Total Present Worth, Longer Term C	O&M Costs			\$4,513,889
	Total Project Capital and O&M C	Cost			\$4,500,000
	TOTAL COST				\$16,500,000

ALTERNATIVE E: Dredge Sediment and Thermal Treatment

Capital Items		Quantity	Units		Cost
Site Preparation		5	Each		\$500,000
Mobilization - Equipme	ent and Silt Curtain	5	LS		\$850,000
Debris Sweep		13	ac		\$208,000
Dredging - 12 hour shift	ts	20	Day	0.153846154	\$114,000
Dredge Monitoring (Wa	nter Quality)	20	Day		\$60,000
Sediment Removal QA		20	Day		\$24,000
Site Restoration		5	Each		\$3,000,000
	Direct Capital:	0 ()			\$4,756,000
	Engineering, Procurement & Contractor Overhead/Profit:	Construction Managem	ent:		570,720
	Contractor Overnead/Front.				713,400
	Total Capital:				\$6,000,000
	SE	DIMENT DEWAT	ERING (GF	RAVITY)	
Capital Items		Quantity	Units		Cost
Land Lease or Purchase		608,771	sf		\$1,095,788
Mobilization		1	LS		\$20,000
Clear and Grub		608,771	sf		\$27,951
Berm Construction		32,365	cy		\$194,193
Rough Grading		608,771	sf		\$152,193
Liner Placement		608,771	sf		\$913,157
Demob/Disposal		1	LS		\$10,000
Regrade		32,365	cy		\$194,193
Seed/Sod		67,641	sy		\$67,641
	Direct Capital:				\$2,675,115
	Engineering, Procurement &	Construction Managem	ent:		321,014
	<i>C C</i> ,	Č			
	Total Capital:				\$3,000,000
		WATER TR			
		WATER TR	EATMENT		
Capital Items		Quantity	Units		Cost
Unit Purchase	1 0 ()	395	gpm		\$691,235
Water Treatment (Include	des Operator)	15,281,244	gal		\$6,112
Water Treatment QA		27	day		\$5,400
	Di sa ist				0502.540
	Direct Capital:				\$702,748
	Engineering, Procurement &	Construction Managem	ent:		84,330
	Total Capital:				\$800,000
	-	ENT (VITRIFICA	TION 1x250	tons Integrated Storage Unit	
Canital Itam-		Quantity	Unito		Cost
Capital Items			Units		
Sediment Treatment Soil Loading		23,912 23,912	ton ton		\$645,634 \$66,955
Soil Hauling		23,912	ton		\$00,933 \$28,022
Son maumig	Direct Capital:	23,712	ton		\$740,611
	Engineering, Procurement & 0	Construction Managem	ent:		\$111,092
	Total Capital:	ŷ.			\$900,000
	•	INSTITUTIO	NAL CONT	ROLS	, , , , , , , , , , , , , , , , , , , ,
Capital Items		Quantity	Units		Cost
Deed Restrictions		1	LS		\$5,000
	Direct Capital:				\$5,000
	Engineering, Procurement & 0	Construction Managem	ent:		600
					65 (00
	Total Capital:				\$5,600
Present Worth of Long-term Monitoring (f Longer Term Operating Cos (no action)	ots	Years 40	Annual Cost \$300,000	\$4,513,889
_	Total Present Worth, Longer	Ferm O&M Costs			\$4,513,889
	Total Project Capital and O	cent Cost			\$4,500,000
	TOTAL COST				\$15,200,000

Table 7-8 Cost Summary for Remedial Alternatives - Little Rapids to De Pere 125 ppb

Alternative	Dredge Volume (cy)	Hydraulic Dredging	Mechanical Dredging	Capping	Dewatering	Water Treatment	Thermal Treatment	CDF Construction	Off-site Disposal	Institutional Controls	Subtotal	20% Contingency	TOTAL
Α	0									\$4,500,000	\$4,500,000	\$900,000	\$5,400,000
В	0									\$9,900,000	\$9,900,000	\$1,980,000	\$11,880,000
C1	1,483,156	\$33,900,000			\$3,100,000	\$1,700,000			\$181,000,000	\$4,500,000	\$224,200,000	\$44,840,000	\$269,040,000
C2A	1,483,156	\$43,300,000				\$5,100,000			\$19,400,000	\$4,500,000	\$72,300,000	\$14,460,000	\$86,760,000
C2B	1,483,156	\$43,300,000			\$22,100,000	\$5,000,000			\$104,900,000	\$4,500,000	\$179,800,000	\$35,960,000	\$215,760,000
С3	1,483,156	\$33,900,000			\$53,400,000	\$2,600,000			\$67,300,000	\$4,500,000	\$161,700,000	\$32,340,000	\$194,040,000
D	1,483,156	\$33,900,000				\$1,900,000		\$32,000,000		\$4,500,000	\$72,300,000	\$14,460,000	\$86,760,000
E	1,483,156	\$43,300,000			\$22,100,000	\$10,700,000	\$62,100,000			\$4,500,000	\$142,700,000	\$28,540,000	\$171,240,000
F	585,020	\$23,100,000		\$40,500,000	\$3,100,000	\$1,100,000			\$71,400,000	\$4,500,000	\$143,700,000	\$28,740,000	\$172,440,000

250 ppb

Alternative	Dredge Volume (cy)	Hydraulic Dredging	Mechanical Dredging	Capping	Dewatering	Water Treatment	Thermal Treatment	CDF Construction	Off-site Disposal	Institutional Controls	Subtotal	20% Contingency	TOTAL
Α	0									\$4,500,000	\$4,500,000	\$900,000	\$5,400,000
В	0									\$9,900,000	\$9,900,000	\$1,980,000	\$11,880,000
C1	1,171,585	\$28,600,000			\$3,100,000	\$1,500,000			\$143,000,000	\$4,500,000	\$180,700,000	\$36,140,000	\$216,840,000
C2A	1,171,585	\$37,600,000				\$4,900,000			\$16,200,000	\$4,500,000	\$63,200,000	\$12,640,000	\$75,840,000
C2B	1,171,585	\$37,600,000			\$22,100,000	\$4,900,000			\$83,700,000	\$4,500,000	\$152,800,000	\$30,560,000	\$183,360,000
С3	1,171,585	\$28,600,000			\$42,200,000	\$2,400,000			\$53,100,000	\$4,500,000	\$130,800,000	\$26,160,000	\$156,960,000
D	1,171,585	\$28,600,000				\$1,700,000		\$32,000,000		\$4,500,000	\$66,800,000	\$13,360,000	\$80,160,000
E	1,171,585	\$37,600,000			\$22,100,000	\$10,500,000	\$49,100,000			\$4,500,000	\$123,800,000	\$24,760,000	\$148,560,000
F	411,065	\$19,500,000		\$36,000,000	\$3,100,000	\$1,000,000			\$50,200,000	\$4,500,000	\$114,300,000	\$22,860,000	\$137,160,000

500 ppb

and hhn													
Alternative	Dredge Volume (cy)	Hydraulic Dredging	Mechanical Dredging	Capping	Dewatering	Water Treatment	Thermal Treatment	CDF Construction	Off-site Disposal	Institutional Controls	Subtotal	20% Contingency	TOTAL
Α	0									\$4,500,000	\$4,500,000	\$900,000	\$5,400,000
В	0									\$9,900,000	\$9,900,000	\$1,980,000	\$11,880,000
C1	776,791	\$20,500,000			\$3,100,000	\$1,300,000			\$94,800,000	\$4,500,000	\$124,200,000	\$24,840,000	\$149,040,000
C2A	776,791	\$30,100,000				\$4,700,000			\$12,100,000	\$4,500,000	\$51,400,000	\$10,280,000	\$61,680,000
C2B	776,791	\$30,100,000			\$22,100,000	\$4,700,000			\$56,900,000	\$4,500,000	\$118,300,000	\$23,660,000	\$141,960,000
С3	776,791	\$20,500,000			\$28,000,000	\$2,100,000			\$35,200,000	\$4,500,000	\$90,300,000	\$18,060,000	\$108,360,000
D	776,791	\$20,500,000				\$1,400,000		\$32,000,000		\$4,500,000	\$58,400,000	\$11,680,000	\$70,080,000
E	776,791	\$30,100,000			\$22,100,000	\$10,300,000	\$32,500,000			\$4,500,000	\$99,500,000	\$19,900,000	\$119,400,000
F	283,812	\$14,600,000		\$30,100,000	\$3,100,000	\$900,000			\$34,600,000	\$4,500,000	\$87,800,000	\$17,560,000	\$105,360,000

1000 ppb

Alternative	Dredge Volume (cy)	Hydraulic Dredging	Mechanical Dredging	Capping	Dewatering	Water Treatment	Thermal Treatment	CDF Construction	Off-site Disposal	Institutional Controls	Subtotal	20% Contingency	TOTAL
Α	0									\$4,500,000	\$4,500,000	\$900,000	\$5,400,000
В	0									\$9,900,000	\$9,900,000	\$1,980,000	\$11,880,000
C1	586,788	\$14,800,000			\$3,100,000	\$1,100,000			\$71,600,000	\$4,500,000	\$95,100,000	\$19,020,000	\$114,120,000
C2A	586,788	\$24,700,000				\$4,600,000			\$10,100,000	\$4,500,000	\$43,900,000	\$8,780,000	\$52,680,000
C2B	586,788	\$24,700,000			\$22,100,000	\$4,600,000			\$44,000,000	\$4,500,000	\$99,900,000	\$19,980,000	\$119,880,000
C3	586,788	\$14,800,000			\$21,200,000	\$2,000,000			\$26,600,000	\$4,500,000	\$69,100,000	\$13,820,000	\$82,920,000
D	586,788	\$14,800,000				\$1,200,000		\$32,000,000		\$4,500,000	\$52,500,000	\$10,500,000	\$63,000,000
E	586,788	\$24,700,000			\$22,100,000	\$10,300,000	\$24,600,000			\$4,500,000	\$86,200,000	\$17,240,000	\$103,440,000
F	170,418	\$9,800,000		\$23,800,000	\$3,100,000	\$900,000			\$20,800,000	\$4,500,000	\$62,900,000	\$12,580,000	\$75,480,000

5000 ppb

Alternative	Dredge Volume (cy)	Hydraulic Dredging	Mechanical Dredging	Capping	Dewatering	Water Treatment	Thermal Treatment	CDF Construction	Off-site Disposal	Institutional Controls	Subtotal	20% Contingency	TOTAL
Α	0									\$4,500,000	\$4,500,000	\$900,000	\$5,400,000
В	0									\$9,900,000	\$9,900,000	\$1,980,000	\$11,880,000
C1	186,348	\$6,900,000			\$3,100,000	\$900,000			\$22,700,000	\$4,500,000	\$38,100,000	\$7,620,000	\$45,720,000
C2A	186,348	\$17,400,000				\$4,500,000			\$6,000,000	\$4,500,000	\$32,400,000	\$6,480,000	\$38,880,000
C2B	186,348	\$17,400,000			\$22,100,000	\$4,500,000			\$16,800,000	\$4,500,000	\$65,300,000	\$13,060,000	\$78,360,000
СЗ	186,348	\$6,900,000			\$6,800,000	\$1,700,000			\$8,500,000	\$4,500,000	\$28,400,000	\$5,680,000	\$34,080,000
D	186,348	\$6,900,000				\$1,000,000		\$32,000,000		\$4,500,000	\$44,400,000	\$8,880,000	\$53,280,000
E	186,348	\$17,400,000			\$22,100,000	\$10,100,000	\$7,800,000			\$4,500,000	\$61,900,000	\$12,380,000	\$74,280,000
F	50,160	\$5,200,000		\$15,000,000	\$3,100,000	\$800,000			\$6,100,000	\$4,500,000	\$34,700,000	\$6,940,000	\$41,640,000

BASIS FOR PRELIMINARY COST ESTIMATES

SEDIMENT REMEDIATION FOX RIVER, WISCONSIN

FOX RIVER, WISCONSIN LITTLE RAPIDS TO DE PERE

Action Level - 125 ppb

Material Handling Assumptions: Volume > 125 ppb	1,483,156	cy 739 ac 1,132,180 m3	Acres corresponds to dredge
Volume > 125 ppb Volume > 250 ppb	1,171,585		footprint area
Volume > 500 ppb	776,791		isospinii area
Volume > 1,000 ppb	586,788		
Volume > 5000 ppb	186,348		
Volume > 50,000 ppb		cy 0 m3	
Solids Specific Gravity	2.47	11./02	
Fresh Water Density In Situ Density	62.4 37.1%		
Slurry Density (20% in situ)	9.0%		Ogden Beeman
Dewatered Density (settling pond)	30%	1 ,	Montgomery Watson
Dewatered Density (CDF or landfill)	50%		Foth & VanDyke
Treated Density	93.7%	w/w = 60.0% v/v = 1.33 tons per cy	
HTTD Treatment Capacity	2,198,917		
Cap Volume	898,136		
Vitrification Treatment Capacity	8,028,121	cy in situ 6440000.00 tons	
Cost Estimating Parameters & Methodology:			
Interest Rate	6.0%		
Sales Tax	5.5%		Not Used
Engineering, Procurement and Construction Mgmt	12.0%		
Contractor Overhead and Profit - Dredging Only	15.0%		
Dredging Debris Sween	\$16,000	mar aara	Ogden Beeman
Debris Sweep Dredge Monitoring (Water Quality)	\$3,000		Oguen Beeman
Sediment Removal OA	\$1,200	· · ·	
Hydraulic - 10-inch Cutterhead	*- ,-	F)	
Site Preparation	\$100,000	per dredge launch site	рј
Mobilization - Equipment	\$135,000	per dredge	Ogden Beeman
Mobilization - Silt Curtain	\$35,000		Ogden Beeman
Shift Rate (10 hours)		per shift	Ogden Beeman
Dredge Rate		cy in situ per 10 hour shift	Ogden Beeman
Site Restoration Hydraulic - 2 12-inch Cutterheads	\$000,000	per dredge launch site	pj
Site Preparation	\$803,400	LS	Ogden Beeman
Mobilization - Equipment	\$1,135,000		Ogden Beeman
Mobilization - Silt Curtain	\$35,000		Ogden Beeman
Shift Rate (12 hours)	\$14,200		Ogden Beeman
Dredge Rate		cy in situ per 12 hour shift	Ogden Beeman
Winter Over Equipment	\$285,000		Ogden Beeman
Site Restoration Length of Piping	95,000	per dredge launch site ft 18 mi	Distance to Town of Holland (map
Length of Fiping	75,000	10 1111	provded by Fred Swed) 11 mi of
			hard piping plus 7 mi of floating
			pipe
Piping Purchase/Installation	\$67	per ft	Ogden Beeman
Number of Road Crossings		each	pj, review map
Cost per Road Crossing		per crossing	pj, review map
Number of Booster Pumps Booster Pump Cost	\$2,500	each per day	Ogden Beeman Ogden Beeman
High Temperature Thermal Desorption	\$2,500	per day	Ogden Beeman
Setup Staging Area	\$50,000		pj
Mobilization/Site Prep	\$150,000		Maxymillian
Sediment Treatment QA		per ton	
Ratio of Amending Sand Volume to Dredge Vol.	0.25		
Sand Purchase and Deliver Blending		per ton per ton	Ole Ole
HTTD (includes off-gas treatment)		per ton	Maxymillian
Stack Testing	\$50,000		Maxymillian
Place Treated Material		per ton	
Vitrification		r	
Capital Costs	\$36,000,000	LS	Unit Cost Study- Minergy
Operating Costs	\$6,800,000		Unit Cost Study- Minergy
Vitrification (Unit Cost includes Cap and Oper Costs)	\$24.0	per ton	Unit Cost Study- Minergy
Capping Mobilization/Site Prep	\$200,000		Ogden Beeman
Area	11,689,322	sf 1,086,000 m2	~ O
Sand Cap Depth	1.7	feet	
Placement Rate		per cy	Ogden Beeman
Sand Purchase		per ton	Ole
Sand Density Armored Cap Depth		tons per cy feet	
Cobbles		per cy	Means
Cap Placement QA	\$100,000	LS	Ogden Beeman
Long-term O&M		of capital	pj
Long-term Monitoring	\$400,000	per year	Anne LTM

Nearshore CDF	Arrowhead		Menasha		
Land Lease or Purchase	\$1.8	per sf	\$1.8		Ole
Length	8,000		9,200		Baird
Capping Volume	190,000		170,000		Baird
Seeding Area	280,000		250,000		Baird
Sheetpile Wall Length	8,000 30		9,200		Baird
Sheetpile Depth Sheetpile Cost		per sf	\$19		based on bathymetry
Shot Rock Berm		per lf	\$550		pj Baird
Rip Rap		per lf	\$250		Baird
Place Treated Material		per cy	\$2		pj
Clean Soil Cap		per cy	\$10		Baird
Seeding	\$1	per sy	\$1		Baird
Mitigation	\$10,000				Tim
		per year			Tim
Long-term Monitoring	\$650,000				Anne LTM
Long-term O&M	2%	of capital			pj
Solidification	10.00/	())			M. A. W.
Percent Lime Lime		(w/w) per ton	Mixing	\$25 per ton	Montgomery Watson pj, pug mill mixing
Line	300	per ton	WIIXIIIg	\$25 per ton	pj, pug min mixing
Dewatering - Upland Pond (2 cells)					
Land Lease or Purchase	\$1.80	per sf			Ole
Area (1050 cy dredge rate)	636,049	sf	14.60168334		2 days slurry + 13 wk solids * 2 cel
Perimeter (1050 cy dredge rate)	3,190	lf			assume square
Area (2885 cy dredge rate)	5,010,182	sf	115.0179519		2 days slurry + 13 wk solids * 2
					cells * 2 shifts per day
Perimeter (2885 cy dredge rate)	8,953				assume square
Depth of Material in Dewatering Cell		feet			based on size at Arrowhead Park
Cell Retention Time		hours			Not Used
Cell Depth Mobilization	\$20,000	feet			ni
Clear and Grub		per acre			pj pj
Berm Volume		cy per lf			2:1 slope, 8-foot top
Berm Construction		per cy			pj
Rough Grading		per sf			pj
Asphalt Liner		per sf			pj, 2 2-inch lifts
Demob/Disposal	\$10,000	LS			pj
Regrade Berm Soils	\$6	per cy			рj
Seed/Sod	\$1	per sy			Baird
Dewatering - Mechanical	****				
Mobilization	\$100,000				pj Clahal Danatasia a
Holding Pond-Centrifuge Water Treatment	\$80	per bone dry ton			Global Dewatering
Flow Rate (1 10-inch Dredge; settling pond)	389	gpm			assume operate 24/7
Unit, Purchase (1 10-inch Dredge; settling pond)	\$684,675				pj
Flow Rate (1 10-inch Dredge; CDF)		gpm			assume operate 24/7
Unit, Purchase (1 10-inch Dredge; CDF)	\$752,984				pj
Flow Rate (2 12-inch Dredges)	3,505				assume operate 24/7
Unit, Purchase (2 12-inch Dredges)	\$2,561,265	LS			pj
Flow Rate (2-12-in Dredges; settling pond)	2,991	gpm			assume operate 24/7
Flow Rate (mechanical dewatering)	1,252				
Unit, Purchase (mechanical dewatering)	\$1,380,892				
Water Treatment (Including Operator)		per 1,000 gallons			pj
Water Treatment QA		per day			pj, 1 sample/day
Length of piping for treated water discharge	20,000	feet			Distance from town of Holland to river per map provided by Fred
Disposal					Swed
Off-Site Disposal (Existing NR 500 Commercial)					5 17 04
Load Soil for Hauling	\$2.80	per ton			pj
Round-trip Hauling		hours			pj
Round-trip Hauling (to Vitrification Facility)	0.5	hours			рj
Tipping Fee (non-TSCA)		per ton			St. Paul
Tipping Fee (TSCA)		per ton			St. Paul
Truck Rate		per hour			pj
Truck Load		tons			pj
Conveyer Facility Construction Dedicated NR 500 Monofill	1,000,000	LS			pj
Landfill Construction	\$5,611,941				
Landfill Area		acres			
Local Siting Fee		per cy			
Closure Cap	\$100,000				
Operating Cost	\$500,000				
Post-closure Monitoring		per year			
Institutional Controls		-			
Public Education Program	\$100,000				pj
O&M Plans	\$20,000				рj
Deed Restrictions	\$5,000				рj
Annual Costs Public Education Program	620.000				:
Public Education Program Maintaining O&M Plans	\$30,000 \$800				pj ni
Reporting	\$800 \$20,000				pj pj
Long-term Monitoring	\$600,000				Anne LTM
Long-term Monitoring (no action)	\$300,000				Anne LTM
- · · · · · · /	,				

Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Construct	tion Manageme	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth of Long-term Monitoring (f Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term O&	M Costs			\$4,513,889
	Total Project Capital and O&M Cos	t			\$4,500,000

ALTERNATIVE B: Monitored Natural Recovery

MONITORING/INSTITUTIONAL CONTROLS

Capital Items	Quantity	Units		Cost
Public Education Program	1	LS		\$100,000
O&M Plans	1	LS		\$20,000
Deed Restrictions	1	LS		\$5,000
Direct Capital:				\$125,000
Engineering, Procurement &	construction Managem	ent:		15,000
Total Capital:				\$140,000
Present Worth of Longer Term Operating C	osts	Years	Annual Cost	
Long-term Monitoring		40	\$600,000	\$9,027,778
Public Education Program		40	\$30,000	\$451,389
Maintaining O&M Plans		40	\$800	\$12,037
Reporting		40	\$20,000	\$300,926
Total Present Worth, Longe	r Term O&M Costs			\$9,792,130
Total Project Capital and	O&M Cost			\$9,900,000

ALTERNATIVE C1: Dredge Sediment With Disposal at Existing NR 500 Commercial Disposal Facility (Passive Dewatering)

SEDIMENT REMOVAL (10-INCH CUTTERHEAD)

Capital Items	Quantity	Units		Cost
Site Preparation	1	Each		\$100,000
Mobilization - Equipment and Silt Curtain	1	LS		\$170,000
Debris Sweep	739	ac		\$11,824,000
Dredging - 12 hour shifts	1413	Day	10.86923077	\$8,054,100
Dredge Monitoring (Water Quality)	1413	Day		\$4,239,000
Sediment Removal QA	1413	Day		\$1,695,600
Site Restoration	1	Each		\$600,000
Direct Capital:				\$26,682,700
Engineering, Procurement & Con-	struction Managem	ent:		3,201,924
Contractor Overhead/Profit:				4,002,405
Total Capital:				\$33,900,000

SEDIMENT DEWATERING (GRAVITY)

Capital Items	Qua	antity	Units	Cost
Land Lease or Purchase	636	,049	sf	\$1,144,889
Mobilization	1	1	LS	\$20,000
Clear and Grub	636	,049	sf	\$29,203
Berm Construction	33,	,083	cy	\$198,496
Rough Grading	636	,049	sf	\$159,012
Liner Placement	636	,049	sf	\$954,074
Demob/Disposal	1	1	LS	\$10,000
Regrade	33,	,083	cy	\$198,496
Seed/Sod	70,	,672	sy	\$70,672
	Direct Capital:			\$2,784,842
	Engineering, Procurement & Construction N	Managemer	nt:	334,181
	Total Capital:			\$3,100,000

Capital Items	Quantity	Units	Cost
Unit Purchase	389	gpm	\$684,675
Water Treatment (Includes Operator)	1,107,174,048	gal	\$442,870
Water Treatment QA	1,978	day	\$395,600
Direct Capital:			\$1,523,145
Engineering, Procurement	& Construction Managemen	nt:	182,777

SEDIMENT DISPOSAL (Existing NR 500 Commercial Disposal Facility)

Capital Items	Quantity	Units	Cost
Solidification	1,982,931	ton	\$49,573,275
Lime Purchase	198,294	ton	\$11,897,640
Soil Loading	1,982,931	ton	\$5,552,207
Soil Hauling	1,982,931	ton	\$9,294,989
Tipping Fees (non-TSCA)	1,982,931	ton	\$85,266,033

 Direct Capital:
 \$161,584,144

 Engineering, Procurement & Construction Management:
 19,390,097

\$1,700,000

Total Capital: \$181,000,000

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions	Quantity	Units LS	Cost \$5,000
	Direct Capital: Engineering, Procurement & Construction Manager	ment:	\$5,000 600
	Total Capital:		\$5,600

Present Worth of Longer Term Operating CostsYearsAnnual CostLong-term Monitoring (no action)40\$300,000\$4,513,889

Total Present Worth, Longer Term O&M Costs \$4,513,889

Total Project Capital and O&M Cost \$4,500,000

TOTAL COST \$224,200,000

ALTERNATIVE C2A: Dredge Sediment with Combined Dewatering and Disposal Facility

Total Capital:

SEDIMENT REMOVAL (12-INCH CUTTERHEAD)

Capital Items	Quantity	Units		Cost
Site Preparation	2	Each		\$1,606,800
Mobilization - Equipment and Silt Curtain	1	LS		\$1,170,000
Debris Sweep	739	ac		\$11,824,000
Dredging - 2 12-hour shifts	258	Day	1.417582418	\$7,327,200
Dredge Monitoring (Water Quality)	258	Day		\$1,548,000
Sediment Removal QA	258	Day		\$619,200
Piping	95,000	ft		\$6,365,000
Road Crossings	4	Each		\$200,000
Booster Pumps	4	Each		\$2,580,000
Winter Over All Equipment	1	year		\$285,000
Site Restoration	1	Each		\$600,000
Direct Capital:				\$34 125 200

 Direct Capital:
 \$34,125,200

 Engineering, Procurement & Construction Management:
 4,095,024

 Contractor Overhead/Profit:
 5,118,780

Total Capital: \$43,300,000

Capital Items		Quantity	Units		Cost
Unit Purchase Water Treatment (Inclu	des Operator)	3,505 1,297,331,997	gpm gal		\$2,561,265 \$518,933
Water Treatment QA	ues operator)	258	day		\$103,200
Piping		20,000	ft		\$1,340,000
	Direct Capital:				\$4,523,398
	Engineering, Procurement & Cons	truction Manageme	ent:		542,808
	Total Capital:				\$5,100,000
	Total capital				30,100,000
	SEDIMENT	Γ DISPOSAL (I	Dedicated N	IR 500 Monofill)	
Capital Items		Quantity	Units		Cost
Landfill Construction		1	LS		\$5,611,941
Local Siting Fee		992,071	cy		\$4,960,355
Closure		31	acres		\$3,074,600
	Direct Capital:				\$13,646,896
	Engineering, Procurement & Cons	truction Manageme	ent:		1,637,628
	Total Capital:				\$15,300,000
Down out Wanth a	61 T O C		Years	Annual Cost	
Operations	f Longer Term Operating Costs		10	\$500,000	\$3,680,044
Post Closure Monitoring	g		40	\$30,000	\$451,389
	Total Present Worth, Longer Term	O&M Costs			\$4,131,432
	Total Fresent Worth, Longer Tern	1 O&W Costs			\$4,131,432
	Total Project Capital and O&M	Cost			\$19,400,000
		INSTITUTIO	NAL CON	TROLS	
Capital Items		Quantity	Units		Cost
Deed Restrictions		1	LS		\$5,000
	Direct Capital:				\$5,000
	Engineering, Procurement & Cons	truction Manageme	ent:		600
	Total Capital:				\$5,600
Present Worth o	f Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring (40	\$300,000	\$4,513,889
	Total Present Worth, Longer Term	O&M Costs			\$4,513,889
	Total Project Capital and O&M	Cost			\$4,500,000
	TOTAL COST				\$72,300,000
A LOTED NA TRIVE COD	D 1 G 11 4 14 G		ı.D.	1.5. 9%	
ALTERNATIVE C2B	: Dredge Sediment with Sep	arate Dewatern	ng and Disp	osai Facility	
	SEDIMEN	T REMOVAL (12-INCH C	CUTTERHEAD)	
Capital Items		Quantity	Units		Cost
Site Preparation	10140 4	2	Each		\$1,606,800
Mobilization - Equipme Debris Sweep	ent and Siit Curtain	739	LS ac		\$1,170,000 \$11,824,000
Dredging - 2 12-hour sh	nifts	258	Day	1.417582418	\$7,327,200
Dredge Monitoring (Wa	ater Quality)	258	Day		\$1,548,000
Sediment Removal QA		258	Day		\$619,200
Piping Road Crossings		95,000 4	ft Each		\$6,365,000 \$200,000
Booster Pumps		4	Each		\$2,580,000
Winter Over All Equipr	nent	1	year		\$2,580,000
Site Restoration		1	Each		\$600,000
	Direct Capital:				\$34,125,200
	Engineering, Procurement & Cons	truction Manageme	ent:		4,095,024
	Contractor Overhead/Profit:				5,118,780
	Total Capital:				\$43,300,000
	Cuprimi				9-12-12-00-1000

SEDIMENT DEWATERING (GRAVITY - NR 213)

Canital Itams		Quantity	Units		Cost
Capital Items Land Lease or Purchase	.	Quantity 5,010,182	sf		\$9,018,328
Mobilization		1	LS		\$20,000
Clear and Grub		5,010,182	sf		\$230,036
Berm Construction		92,850	cy		\$557,099
Rough Grading		5,010,182	sf		\$1,252,545
Liner Placement		5,010,182	sf		\$7,515,273
Demob/Disposal		1	LS		\$10,000
Regrade Seed/Sod		92,850 556,687	cy sy		\$557,099 \$556,687
		,	~,		***************************************
	Direct Capital:				\$19,717,067
	Engineering, Procurement & Const	truction Manageme	ent:		2,366,048
					<u>-</u>
	Total Capital:				\$22,100,000
		WATER TE	REATMEN	Γ	
Capital Items		Quantity	Units		Cost
Unit Purchase	d ()t)	2,991	gpm		\$2,561,265
Water Treatment (Inclu Water Treatment QA	ides Operator)	1,107,174,048 720	gal day		\$442,870 \$144,000
Piping Piping		20,000	ft		\$1,340,000
r 0		.,			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
	Direct Capital:				\$4,488,135
	Engineering, Procurement & Const	truction Manageme	ent:		538,576
	8 8,				
	Total Capital:				\$5,000,000
	SEDIMENT	T DISPOSAL (I	Dedicated N	R 500 Monofill)	
Capital Items		Quantity	Units		Cost
Solidification		1,982,931	ton		\$49,573,275
Lime Purchase		198,294	ton		\$11,897,640
Sediment Loading		1,982,930	ton		\$5,552,205
=					
Sediment Hauling		1,982,930	ton		\$9,294,987
Landfill Construction		1	LS		\$5,611,941
Local Siting Fee		992,071	cy		\$4,960,355
Closure		31	acres		\$3,074,600
	Direct Capital:	trustian Managama	unt:		\$89,965,003
	Engineering, Procurement & Const	iruction Manageme	ant.		10,795,800
	Total Capital:				\$100,800,000
Present Worth o	of Longer Term Operating Costs		Years	Annual Cost	
Operations			10	\$500,000	\$3,680,044
Post Closure Monitorin	g		40	\$30,000	\$451,389
	Total Present Worth, Longer Term	O&M Costs			\$4,131,432
	Toma Tresent Worm, Bonger Term	- Can Cooks			
	Total Project Capital and O&M	Cost			\$104,900,000
		INSTITUTIO	NAL CON	ΓROLS	
Capital Items		Quantity	Units		Cost
Deed Restrictions		Quantity 1	LS		\$5,000
	Direct Capital:				\$5,000
	Engineering, Procurement & Const	truction Manageme	ent:		600
	Total Capital:				\$5,600
	Total Capital.				\$5,000
	f Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring	(no action)		40	\$300,000	\$4,513,889
	Total Present Worth, Longer Term	O&M Costs			\$4,513,889
	rotat rresent worth, Longer Term	Occivi Custs			\$4,313,889
	Total Project Capital and O&M	Cost			\$4,500,000
	TOTAL COST				\$179,800,000
					, ,

ALTERNATIVE C3: Dredge with Disposal at Existing NR 500 Commercial Disposal Facility (Mechanical Dewatering)

SEDIMENT REMOVAL (10-INCH CUTTERHEAD)

					_
Capital Items Site Preparation		Quantity 1	Units Each		Cost \$100,000
Mobilization - Equipme	ent and Silt Curtain	1	LS		\$170,000
Debris Sweep	and sint current	739	ac		\$11,824,000
Dredging - 12 hour shif	ts	1413	Day	10.86923077	\$8,054,100
Dredge Monitoring (Wa	ater Quality)	1413	Day		\$4,239,000
Sediment Removal QA		1413	Day		\$1,695,600
Site Restoration		1	Each		\$600,000
	Direct Capital:				\$26,682,700
	Engineering, Procurement & Constr	ruction Manageme	ent:		3,201,924
	Contractor Overhead/Profit:				4,002,405
	Total Capital:				\$33,900,000
	SEDIME	NT DEWATE	DINC (MEC	CHANICAL	
	SEDIME	NI DEWAIL	idi vo (inec	in wear)	
Capital Items		Quantity	Units		Cost
Mobilization/Site Prep Dewatering		1 594,879	LS bdt		\$100,000 \$47,590,332
Dewatering		394,879	out		347,390,332
	Direct Capital:				\$47,690,332
	Engineering, Procurement & Constr	uction Manageme	ent.		5,722,840
	Engineering, Freedrenien & Const	uecron manageme			5,722,010
	Total Capital:				\$53,400,000
		WATER TI	REATMENT	Γ	
G 1: 17:		A	** •		
Capital Items Unit Purchase		Quantity 456	Units gpm		Cost \$1,380,892
Water Treatment (Inclu	des Operator)	1,297,331,997	gal		\$518,933
Water Treatment QA	. ,	1,978	day		\$395,600
	Direct Capital:				\$2,295,425
	Engineering, Procurement & Consti	uction Manageme	ent:		275,451
	2 2,				
	Total Capital:	·			\$2,600,000
	Total Capital:		R 500 Comi	mercial Disposal Facility)	\$2,600,000
	Total Capital:	AL (Existing N		mercial Disposal Facility)	
Capital Items	Total Capital:	AL (Existing N	Units	mercial Disposal Facility)	Cost
Soil Loading	Total Capital:	AL (Existing N Quantity 1,189,758	Units ton	mercial Disposal Facility)	Cost \$3,331,323
Soil Loading Soil Hauling	Total Capital: SEDIMENT DISPOSA	AL (Existing N Quantity 1,189,758 1,189,758	Units ton ton	mercial Disposal Facility)	Cost \$3,331,323 \$5,576,992
Soil Loading Soil Hauling Tipping Fees (non-TSC	Total Capital: SEDIMENT DISPOSA	Quantity 1,189,758 1,189,758 1,189,758	Units ton ton	mercial Disposal Facility)	Cost \$3,331,323 \$5,576,992 \$51,159,607
Soil Loading Soil Hauling	Total Capital: SEDIMENT DISPOSA	AL (Existing N Quantity 1,189,758 1,189,758	Units ton ton	mercial Disposal Facility)	Cost \$3,331,323 \$5,576,992
Soil Loading Soil Hauling Tipping Fees (non-TSC	Total Capital: SEDIMENT DISPOSA	Quantity 1,189,758 1,189,758 1,189,758	Units ton ton	mercial Disposal Facility)	Cost \$3,331,323 \$5,576,992 \$51,159,607 \$0
Soil Loading Soil Hauling Tipping Fees (non-TSC	Total Capital: SEDIMENT DISPOSA A) Direct Capital:	Quantity 1,189,758 1,189,758 1,189,758 0	Units ton ton ton	mercial Disposal Facility)	Cost \$3,331,323 \$5,576,992 \$51,159,607 \$0 \$60,067,922
Soil Loading Soil Hauling Tipping Fees (non-TSC	Total Capital: SEDIMENT DISPOSA	Quantity 1,189,758 1,189,758 1,189,758 0	Units ton ton ton	mercial Disposal Facility)	Cost \$3,331,323 \$5,576,992 \$51,159,607 \$0
Soil Loading Soil Hauling Tipping Fees (non-TSC	Total Capital: SEDIMENT DISPOSA A) Direct Capital:	Quantity 1,189,758 1,189,758 1,189,758 0	Units ton ton ton	mercial Disposal Facility)	Cost \$3,331,323 \$5,576,992 \$51,159,607 \$0 \$60,067,922
Soil Loading Soil Hauling Tipping Fees (non-TSC	Total Capital: SEDIMENT DISPOSA A) Direct Capital: Engineering, Procurement & Constr	Quantity 1,189,758 1,189,758 1,189,758 0	Units ton ton ton	mercial Disposal Facility)	Cost \$3,331,323 \$5,576,992 \$51,159,607 \$0 \$60,067,922 7,208,151
Soil Loading Soil Hauling Tipping Fees (non-TSC	Total Capital: SEDIMENT DISPOSA A) Direct Capital: Engineering, Procurement & Construction Total Capital:	Quantity 1,189,758 1,189,758 1,189,758 0	Units ton ton ton ton		Cost \$3,331,323 \$5,576,992 \$51,159,607 \$0 \$60,067,922 7,208,151
Soil Loading Soil Hauling Tipping Fees (non-TSC Tipping Fees (TSCA)	Total Capital: SEDIMENT DISPOSA A) Direct Capital: Engineering, Procurement & Construction Total Capital:	Quantity 1,189,758 1,189,758 1,189,758 0 ruction Management	Units ton ton ton ton ton Ton Ton Ton Ton		Cost \$3,331,323 \$5,576,992 \$51,159,607 \$0 \$60,067,922 7,208,151 \$67,300,000
Soil Loading Soil Hauling Tipping Fees (non-TSC Tipping Fees (TSCA)	Total Capital: SEDIMENT DISPOSA A) Direct Capital: Engineering, Procurement & Construction Total Capital:	AL (Existing N Quantity 1,189,758 1,189,758 0 ruction Management	Units ton ton ton ton ton		Cost \$3,331,323 \$5,576,992 \$51,159,607 \$0 \$60,067,922 7,208,151
Soil Loading Soil Hauling Tipping Fees (non-TSC Tipping Fees (TSCA)	Total Capital: SEDIMENT DISPOSA A) Direct Capital: Engineering, Procurement & Construction Total Capital:	Quantity 1,189,758 1,189,758 1,189,758 0 ruction Management	Units ton ton ton ton ton Ton Ton Ton Ton		Cost \$3,331,323 \$5,576,992 \$51,159,607 \$0 \$60,067,922 7,208,151 \$67,300,000
Soil Loading Soil Hauling Tipping Fees (non-TSC Tipping Fees (TSCA)	Total Capital: SEDIMENT DISPOSA A) Direct Capital: Engineering, Procurement & Construction Total Capital:	Quantity 1,189,758 1,189,758 1,189,758 0 ruction Management NSTITUTION Quantity 1	Units ton ton ton ton ton ton ton ton		Cost \$3,331,323 \$5,576,992 \$51,159,607 \$0 \$60,067,922 7,208,151 \$67,300,000
Soil Loading Soil Hauling Tipping Fees (non-TSC Tipping Fees (TSCA)	Total Capital: SEDIMENT DISPOSA A) Direct Capital: Engineering, Procurement & Constr. Total Capital: I! Direct Capital: Engineering, Procurement & Constr.	Quantity 1,189,758 1,189,758 1,189,758 0 ruction Management NSTITUTION Quantity 1	Units ton ton ton ton ton ton ton ton		Cost \$3,331,323 \$5,576,992 \$51,159,607 \$0 \$60,067,922 7,208,151 \$67,300,000 \$5,000 \$5,000 600
Soil Loading Soil Hauling Tipping Fees (non-TSC Tipping Fees (TSCA)	Total Capital: SEDIMENT DISPOSA A) Direct Capital: Engineering, Procurement & Construction Total Capital: If Direct Capital:	Quantity 1,189,758 1,189,758 1,189,758 0 ruction Management NSTITUTION Quantity 1	Units ton ton ton ton ton ton ton ton		Cost \$3,331,323 \$5,576,992 \$51,159,607 \$0 \$60,067,922 7,208,151 \$67,300,000 Cost \$5,000 \$5,000
Soil Loading Soil Hauling Tipping Fees (non-TSC Tipping Fees (TSCA) Capital Items Deed Restrictions	Total Capital: SEDIMENT DISPOSA A) Direct Capital: Engineering, Procurement & Construction Total Capital: Engineering, Procurement & Construction Direct Capital: Engineering, Procurement & Construction Total Capital: f Longer Term Operating Costs	Quantity 1,189,758 1,189,758 1,189,758 0 ruction Management NSTITUTION Quantity 1	Units ton ton ton ton ent: AL CONTR Units LS ent:	OLS Annual Cost	Cost \$3,331,323 \$5,576,992 \$51,159,607 \$0 \$60,067,922 7,208,151 \$67,300,000 \$5,000 \$5,000 \$5,600
Soil Loading Soil Hauling Tipping Fees (non-TSC Tipping Fees (TSCA) Capital Items Deed Restrictions	Total Capital: SEDIMENT DISPOSA A) Direct Capital: Engineering, Procurement & Construction Total Capital: Engineering, Procurement & Construction Direct Capital: Engineering, Procurement & Construction Total Capital: f Longer Term Operating Costs	Quantity 1,189,758 1,189,758 1,189,758 0 ruction Management NSTITUTION Quantity 1	Units ton ton ton ton ton tent:	OLS	Cost \$3,331,323 \$5,576,992 \$51,159,607 \$0 \$60,067,922 7,208,151 \$67,300,000 \$5,000 \$5,000 600
Soil Loading Soil Hauling Tipping Fees (non-TSC Tipping Fees (TSCA) Capital Items Deed Restrictions	A) Direct Capital: Engineering, Procurement & Construction Total Capital: f Longer Term Operating Costs ino action)	Quantity 1,189,758 1,189,758 1,189,758 0 ruction Management NSTITUTION Quantity 1 ruction Management	Units ton ton ton ton ent: AL CONTR Units LS ent:	OLS Annual Cost	Cost \$3,331,323 \$5,576,992 \$51,159,607 \$0 \$60,067,922 7,208,151 \$67,300,000 \$5,000 \$5,000 \$5,600
Soil Loading Soil Hauling Tipping Fees (non-TSC Tipping Fees (TSCA) Capital Items Deed Restrictions	Total Capital: SEDIMENT DISPOSA A) Direct Capital: Engineering, Procurement & Construction Total Capital: Engineering, Procurement & Construction Total Capital: f Longer Term Operating Costs no action) Total Present Worth, Longer Term of	Quantity 1,189,758 1,189,758 1,189,758 0 ruction Management NSTITUTION Quantity 1 ruction Management	Units ton ton ton ton ent: AL CONTR Units LS ent:	OLS Annual Cost	Cost \$3,331,323 \$5,576,992 \$51,159,607 \$0 \$60,067,922 7,208,151 \$67,300,000 Cost \$5,000 \$5,000 \$5,000 \$5,600 \$4,513,889
Soil Loading Soil Hauling Tipping Fees (non-TSC Tipping Fees (TSCA) Capital Items Deed Restrictions	A) Direct Capital: Engineering, Procurement & Construction Total Capital: f Longer Term Operating Costs ino action)	Quantity 1,189,758 1,189,758 1,189,758 0 ruction Management NSTITUTION Quantity 1 ruction Management	Units ton ton ton ton ent: AL CONTR Units LS ent:	OLS Annual Cost	Cost \$3,331,323 \$5,576,992 \$51,159,607 \$0 \$60,067,922 7,208,151 \$67,300,000 \$5,000 \$5,000 \$5,600
Soil Loading Soil Hauling Tipping Fees (non-TSC Tipping Fees (TSCA) Capital Items Deed Restrictions	Total Capital: SEDIMENT DISPOSA A) Direct Capital: Engineering, Procurement & Construction Total Capital: Engineering, Procurement & Construction Total Capital: f Longer Term Operating Costs no action) Total Present Worth, Longer Term of	Quantity 1,189,758 1,189,758 1,189,758 0 ruction Management NSTITUTION Quantity 1 ruction Management	Units ton ton ton ton ent: AL CONTR Units LS ent:	OLS Annual Cost	Cost \$3,331,323 \$5,576,992 \$51,159,607 \$0 \$60,067,922 7,208,151 \$67,300,000 Cost \$5,000 \$5,000 \$5,000 \$5,600 \$4,513,889

SEDIMENT REMOVAL (10-INCH CUTTERHEAD)

Capital Items Site Preparation		Quantity	Units Each		Cost \$100,000
Mobilization - Equipme	ent and Silt Curtain	1	LS		\$170,000
Debris Sweep		739	ac		\$11,824,000
Dredging - 12 hour shif		1413	Day	10.86923077	\$8,054,100
Dredge Monitoring (Wa	ater Quality)	1413	Day		\$4,239,000
Sediment Removal QA Site Restoration		1413 1	Day Each		\$1,695,600 \$600,000
Site Restoration		1	Lacii		\$000,000
	Direct Capital:				\$26,682,700
	Engineering, Procurement & Cons	struction Manageme	ent:		3,201,924
	Contractor Overhead/Profit:				4,002,405
	Total Capital:				\$33,900,000
		WATER TI	REATMEN	г	
6					
Capital Items		Quantity	Units		Cost
Unit Purchase Water Treatment (Inclu	des Operator)	456 1,297,331,997	gpm gal		\$752,984 \$518,933
Water Treatment QA	des Operator)	1,978	day		\$395,600
water freatment Q11		1,570	uuy		\$375,000
	Direct Capital:				\$1,667,517
	Engineering, Procurement & Cons	struction Manageme	ent.		200,102
	88,				
	Total Capital:				\$1,900,000
	(CDF CONSTRU	JCTION - M	1ENASHA	
Capital Items		Quantity	Units		Cost
Mobilization/Site Prep		27,778	sf		\$50,000
Shot Rock/Rip Rap		9,200	lf		\$7,360,000
Sheetpile Placement		276,000	sf		\$5,244,000
Clean Soil Cap		170,000	cy		\$1,700,000
Seeding		250,000	sy		\$250,000
Mitigation		52	acre		\$516,529
	Direct Capital:				\$15,120,529
	Engineering, Procurement & Cons	struction Manageme	ent:		1,814,463
	Total Capital:				\$16,934,992
	f Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	10,000	\$150,463
Long-term Monitoring			40	650,000	\$9,780,093
Long-term O&M			40	338,700	\$5,096,178
	Total Present Worth, Longer Term	n O&M Costs			\$15,026,734
	Total Project Capital and O&M	Cost			\$32,000,000
		INSTITUTIO	ONAL CON	TROLS	
Contract		0 ***	¥Y		~ .
Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital:				\$5,000
	Engineering, Procurement & Cons	struction Manageme	ent:		600
	Total Capital:				\$5,600
Present Worth o Long-term Monitoring	f Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term	n O&M Costs		,	\$4,513,889
	Total Project Capital and O&M				\$4,500,000
	rotat i roject Capitai anu O&M	CUST			\$4,500,000
	TOTAL COST				\$72,300,000

ALTERNATIVE E: Dredge Sediment and Thermal Treatment

SEDIMENT REMOVAL (12-INCH CUTTERHEAD)

Capital Items	Quantity	Units		Cost
Site Preparation	2	Each		\$1,606,800
Mobilization - Equipment and Silt Curtain	1	LS		\$1,170,000
Debris Sweep	739	ac		\$11,824,000
Dredging - 2 12-hour shifts	258	Day	1.417582418	\$7,327,200
Dredge Monitoring (Water Quality)	258	Day		\$1,548,000
Sediment Removal QA	258	Day		\$619,200
Piping	95,000	ft		\$6,365,000
Road Crossings	4	Each		\$200,000
Booster Pumps	4	Each		\$2,580,000
Winter Over All Equipment	1	year		\$285,000
Site Restoration	1	Each		\$600,000
Direct Capital:				\$34,125,200
Engineering, Procurement & C	Construction Managem	ent:		4,095,024
Contractor Overhead/Profit:				5,118,780
Total Capital:				\$43,300,000

SEDIMENT DEWATERING (GRAVITY)

Capital Items	Quantity	Units	Cost
Land Lease or Purchase	5,010,182	sf	\$9,018,328
Mobilization	1	LS	\$20,000
Clear and Grub	5,010,182	sf	\$230,036
Berm Construction	92,850	cy	\$557,099
Rough Grading	5,010,182	sf	\$1,252,545
Liner Placement	5,010,182	sf	\$7,515,273
Demob/Disposal	1	LS	\$10,000
Regrade	92,850	cy	\$557,099
Seed/Sod	556,687	sy	\$556,687
P: 10 31			610 717 077

Direct Capital: \$19,717,067
Engineering, Procurement & Construction Management: 2,366,048

Total Capital: \$22,100,000

WATER TREATMENT

Capital Items	Quantity	Units	Cost
Unit Purchase	2,991	gpm	\$2,561,265
Water Treatment (Includes Operator)	1,107,174,048	gal	\$442,870
Water Treatment QA	720	day	\$144,000
Piping	95,000	ft	\$6,365,000

 Direct Capital:
 \$9,513,135

 Engineering, Procurement & Construction Management:
 1,141,576

Total Capital: \$10,700,000

SEDIMENT TREATMENT (VITRIFICATION 2x375 t Standalone Storage Units)

Capital Items	Q	Quantity	Units	Cost
Sediment Treatment	1,	982,930	ton	\$47,590,332
Soil Loading	1,	982,930	ton	\$5,552,205
Soil Hauling	1,	982,930	ton	\$2,323,747
	Direct Capital:			\$55,466,284
	Engineering, Procurement & Construction	n Management	:	\$6,655,954

Total Capital: \$62,100,000

Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Construct	tion Manageme	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth Cong-term Monitoring	of Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term O&	M Costs			\$4,513,889
	Total Project Capital and O&M Cos	st			\$4,500,000
	TOTAL COST				\$142,700,000

ALTERNATIVE F: Cap Sediment to Maximum Extent Possible, Dredge and Off-site Disposal

CAPPING

Capital Items Mobilization/Site Prep Sand Purchase Sand Placement Cobble Purchase and F Cap Placement QA		Quantity 1 1,010,188 721,563 432,938 1	Units LS tons cy cy LS		Cost \$200,000 \$6,061,130 \$4,329,379 \$12,988,136 \$100,000
	Direct Capital: Engineering, Procurement & Const	truction Managem	ent:		\$23,678,645 2,841,437
	Total Capital:				\$26,520,082
Present Worth of Monitoring/O&M	of Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring			40	\$400,000	\$6,018,519
Long-term O&M			40	\$530,402	\$7,980,581
	Total Present Worth, Longer Term	O&M Costs			\$13,999,099
	Total Project Capital and O&M	Cost			\$40,500,000

SEDIMENT REMOVAL (10-INCH CUTTERHEAD)

Capital Items	Quantity	Units	Cost
Site Preparation	1	Each	\$100,000
Mobilization - Equipment and Silt Curtain	1	LS	\$170,000
Debris Sweep	739	ac	\$11,824,000
Dredging - 12 hour shifts	558	Day	\$3,180,600
Dredge Monitoring (Water Quality)	558	Day	\$1,674,000
Sediment Removal QA	558	Day	\$669,600
Site Restoration	1	Each	\$600,000
Direct Capital:			\$18,218,200
Engineering, Procurement & Co	onstruction Manageme	ent:	2,186,184
Contractor Overhead/Profit:			2,732,730
Total Capital:			\$23,100,000

SEDIMENT DEWATERING (GRAVITY)

Capital Items	Quantity	Units	Cost
Land Lease or Purchase	636,049	sf	\$1,144,889
Mobilization	1	LS	\$20,000
Clear and Grub	636,049	sf	\$29,203
Berm Construction	33,083	cy	\$198,496
Rough Grading	636,049	sf	\$159,012
Liner Placement	636,049	sf	\$954,074
Demob/Disposal	1	LS	\$10,000
Regrade	33,083	cy	\$198,496
Seed/Sod	70,672	sy	\$70,672
Direct	Capital:		\$2,784,842
Engin	eering, Procurement & Construction Managem	ent:	334,181
	-		<u> </u>

Total Capital: \$3,100,000

Capital Items Unit Purchase Water Treatment (Inclu Water Treatment QA	ides Operator)	Quantity 389 436,716,588 781	Units gpm gal Day		Cost \$684,675 \$174,687 \$156,200
water freatment Q/f	Direct Conitals	701	Day		
	Direct Capital: Engineering, Procurement & Con	nstruction Manageme	ent.		\$1,015,562 121,867
	Engineering, 1 rocurement & co.	iisii delioii iiidaageiii			121,007
	Total Capital:				\$1,100,000
	SEDIMENT DISPO	OSAL (Existing N	R 500 Com	mercial Disposal Facility)	
Capital Items		Quantity	Units		Cost
Solidification		782,153	ton		\$19,553,825
Lime Purchase		78,216	ton		\$4,692,960
Soil Loading		782,153	ton		\$2,190,028
Soil Hauling		782,153	ton		\$3,666,342
Tipping Fees (non-TSC	CA)	782,153	ton		\$33,632,579
	Direct Capital:				\$63,735,735
	Engineering, Procurement & Con	nstruction Manageme	ent:		7,648,288
	Total Capital:				\$71,400,000
		INSTITUTIO	ONAL CON	TROLS	
Capital Items		Quantity	Units		Cost
Deed Restrictions		Quantity 1	LS		\$5,000
	Direct Capital: Engineering, Procurement & Cor	netruction Manageme	ent:		\$5,000 600
	Engineering, Frocurement & Con	iistruction ivianageme	ant.		
	Total Capital:				\$5,600
Present Worth of Long-term Monitoring	of Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Ter	rm O&M Costs			\$4,513,889
	Total Project Capital and O&M	M Cost			\$4,500,000
	TOTAL COST				\$143,700,000

BASIS FOR PRELIMINARY COST ESTIMATES

SEDIMENT REMEDIATION FOX RIVER WISCONSIN

FOX RIVER, WISCONSIN LITTLE RAPIDS TO DE PERE

Action Level - 250 ppb

W (1177 W)		
Material Handling Assumptions: Volume > 250 ppb	1,171,585 cy 665 ac 894,340 m3	Acres corresponds to dredge
Volume > 125 ppb	1,483,156 cy 605 ac 694,340 m3	footprint area
Volume > 500 ppb	776,791 cy 592,970 m3	
Volume > 1,000 ppb	586,788 cy 447,930 m3	
Volume > 5000 ppb	186,348 cy 142,250 m3	
Volume > 50,000 ppb	0 cy 0 m3	
Solids Specific Gravity	2.47 62.4 lb/ft3	
Fresh Water Density In Situ Density	37.1% w/w 19.3% v/v 1.08 tons per cy	
Slurry Density (20% in situ)	9.0% w/w 3.9% v/v 0.89 tons per cy	Ogden Beeman
Dewatered Density (settling pond)	30% w/w 14.8% v/v 1.03 tons per cy	Montgomery Watson
Dewatered Density (CDF or landfill)	50% w/w 28.8% v/v 1.20 tons per cy	Foth & VanDyke
Treated Density	93.7% w/w 60.0% v/v 1.33 tons per cy	
HTTD Treatment Capacity	2,198,917 cy 1,650,000 tons	
Cap Volume Vitrification Treatment Capacity	760,521 cy 580,550 m3 8,028,121 cy in situ 6440000.00 tons	
viumeation Treatment Capacity	8,028,121 cy iii situ 0440000.00 tolis	
Cost Estimating Parameters & Methodology:		
Interest Rate	6.0%	
Sales Tax	5.5%	Not Used
Engineering, Procurement and Construction Mgmt	12.0%	
Contractor Overhead and Profit - Dredging Only <u>Dredging</u>	15.0%	
Debris Sweep	\$16,000 per acre	Ogden Beeman
Dredge Monitoring (Water Quality)	\$3,000 per day	
Sediment Removal QA	\$1,200 per day	
Hydraulic - 10-inch Cutterhead		
Site Preparation	\$100,000 per dredge launch site	pj
Mobilization - Equipment Mobilization - Silt Curtain	\$135,000 per dredge \$35,000	Ogden Beeman Ogden Beeman
Shift Rate (10 hours)	\$5,700 per shift	Ogden Beeman
Dredge Rate	1050 cy in situ per 10 hour shift	Ogden Beeman
Site Restoration	\$600,000 per dredge launch site	pj
Hydraulic - 2 12-inch Cutterheads		
Site Preparation	\$803,400 LS	Ogden Beeman
Mobilization - Equipment Mobilization - Silt Curtain	\$1,135,000 LS \$35,000	Ogden Beeman Ogden Beeman
Shift Rate (12 hours)	\$35,000 \$14,200 per shift	Ogden Beeman
Dredge Rate	2885 cy in situ per 12 hour shift	Ogden Beeman
Winter Over Equipment	\$285,000 per year	Ogden Beeman
Site Restoration	\$600,000 per dredge launch site	
Length of Piping	95,000 ft 18 mi	Distance to Town of Holland (map
		provded by Fred Swed) 11 mi of
		hard piping plus 7 mi of floating pipe
Piping Purchase/Installation	\$67 per ft	Ogden Beeman
Number of Road Crossings	4 each	pj, review map
Cost per Road Crossing	\$50,000 per crossing	pj, review map
Number of Booster Pumps	4 each	Ogden Beeman
Booster Pump Cost	\$2,500 per day	Ogden Beeman
High Temperature Thermal Desorption Setup Staging Area	\$50,000	ni.
Mobilization/Site Prep	\$150,000	pj Maxymillian
Sediment Treatment QA	\$2 per ton	
Ratio of Amending Sand Volume to Dredge Vol.	0.25 :1	
Sand Purchase and Deliver	\$6 per ton	Ole
Blending	\$25 per ton	Ole
HTTD (includes off-gas treatment) Stack Testing	\$75 per ton \$50,000 LS	Maxymillian Maxymillian
Place Treated Material	\$3 per ton	Waxyiiiiiaii
Vitrification	φο per και	
Capital Costs	\$36,000,000 LS	Unit Cost Study- Minergy
Operating Costs	\$6,800,000 per year	Unit Cost Study- Minergy
Vitrification (Unit Cost includes Cap and Oper Costs)	\$24.0 per ton	Unit Cost Study- Minergy
Capping Mobilization/Site Prep	\$200,000	Ogden Beeman
Area	10,155,502 sf 943,500 m2	oguen Beenman
Sand Cap Depth	1.7 feet	
Placement Rate	\$6 per cy	Ogden Beeman
Sand Purchase	\$6 per ton	Ole
Sand Density Armored Cap Depth	1.4 tons per cy 1.0 feet	
Cobbles	\$30 per cy	Means
Cap Placement QA	\$100,000 LS	Ogden Beeman
Long-term O&M	2% of capital	pj Anna I TM
Long-term Monitoring	\$400,000 per year	Anne LTM

Nearshore CDF	Arrowhead		Menasha		
Land Lease or Purchase	\$1.8	per sf	\$1.8		Ole
Length	8,000	lf	9,200		Baird
Capping Volume	190,000	cy	170,000		Baird
Seeding Area	280,000		250,000		Baird
Sheetpile Wall Length	8,000		9,200		Baird
Sheetpile Depth	30		30		based on bathymetry
Sheetpile Cost		per sf	\$19		pj
Shot Rock Berm		per lf	\$550		Baird
Rip Rap		per lf	\$250		Baird
Place Treated Material		per cy	\$2		pj
Clean Soil Cap		per cy	\$10		Baird
Seeding		per sy	\$1		Baird
Mitigation	\$10,000				Tim
	\$10,000				Tim
Long-term Monitoring	\$650,000				Anne LTM
Long-term O&M	2%	of capital			рј
Solidification					
Percent Lime		(w/w)			Montgomery Watson
Lime	\$60	per ton	Mixing	\$25 per ton	pj, pug mill mixing
Dewatering - Upland Pond (2 cells)					
Land Lease or Purchase	\$1.80				Ole
Area (1050 cy dredge rate)	636,049				2 days slurry + 13 wk solids * 2 cell
Perimeter (1050 cy dredge rate)	3,190				assume square
Area (2885 cy dredge rate)	5,010,182	sf			2 days slurry + 13 wk solids * 2
					cells * 2 shifts per day
Perimeter (2885 cy dredge rate)	8,953				assume square
Depth of Material in Dewatering Cell		feet			based on size at Arrowhead Park
Cell Retention Time		hours			Not Used
Cell Depth		feet			
Mobilization	\$20,000				pj
Clear and Grub		per acre			pj
Berm Volume		cy per lf			2:1 slope, 8-foot top
Berm Construction		per cy			pj
Rough Grading	\$0.25				pj
Asphalt Liner	\$1.50				pj, 2 2-inch lifts
Demob/Disposal	\$10,000				pj
Regrade Berm Soils		per cy			pj B.: I
Seed/Sod	51	per sy			Baird
Dewatering - Mechanical	6100.000				:
Mobilization	\$100,000				pj Clahal Danistania
Holding Pond-Centrifuge	\$80	per bone dry ton			Global Dewatering
Water Treatment					
	200				
Flow Rate (1 10-inch Dredge; settling pond)		gpm			assume operate 24/7
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond)	\$684,675	LS			pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF)	\$684,675 456	LS gpm			pj assume operate 24/7
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF)	\$684,675 456 \$752,984	LS gpm LS			pj assume operate 24/7 pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges)	\$684,675 456 \$752,984 3,505	LS gpm LS gpm			pj assume operate 24/7 pj assume operate 24/7
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges)	\$684,675 456 \$752,984 3,505 \$2,561,265	LS gpm LS gpm LS			pj assume operate 24/7 pj assume operate 24/7 pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-inch Dredges)	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991	LS gpm LS gpm LS gpm LS gpm			pj assume operate 24/7 pj assume operate 24/7
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering)	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252	LS gpm LS gpm LS gpm LS gpm gpm			pj assume operate 24/7 pj assume operate 24/7 pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering)	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892	LS gpm LS gpm LS gpm LS gpm gpm gpm LS			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator)	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40	LS gpm LS gpm LS gpm LS gpm gpm gpm LS per 1,000 gallons			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40	LS gpm LS gpm LS gpm gpm LS per 1,000 gallons per day			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator)	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40	LS gpm LS gpm LS gpm gpm LS per 1,000 gallons per day			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-inch Dredges) Flow Rate (2-12-inch Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40	LS gpm LS gpm LS gpm gpm LS per 1,000 gallons per day			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (nechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40	LS gpm LS gpm LS gpm gpm LS per 1,000 gallons per day			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (nechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial)	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000	LS gpm LS gpm LS gpm gpm gpm LS per 1,000 gallons per day feet			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; Settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment (QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000	LS gpm LS gpm LS gpm gpm ppm LS gpm gpm dS gpm gpm LS per 1,000 gallons per day feet			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (enchanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment (A Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000	LS gpm LS gpm LS gpm gpm LS gpm gpm ppm LS per 1,000 gallons per day feet			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000	LS gpm LS gpm LS gpm gpm LS gpm gpm tLS gpm gpm tLS per 1,000 gallons per day feet per ton hours hours			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA)	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000 \$2,80 2 0.55 \$43	LS gpm LS gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj pj St. Paul
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (nechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA)	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000 \$2.80 2 0.5 \$43 \$55	LS gpm LS gpm LS gpm gpm LS gpm gpm ts per 1,000 gallons per day feet per ton hours hours hours per ton per ton			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000 \$2.80 2 0.5 \$43 \$55 \$75	LS gpm LS gpm LS gpm gpm est S gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per ton per hour			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (enchanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000 \$2,000 \$2,80 2 0.5 \$43 \$55 \$75	LS gpm LS gpm LS gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per ton per ton per ton per hour tons			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000 \$2.80 2 0.5 \$43 \$55 \$75	LS gpm LS gpm LS gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per ton per ton per ton per hour tons			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (enchanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2,80 2 0,55 \$43 \$55 \$75 32 1,000,000	LS gpm LS gpm LS gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per ton per ton per ton per hour tons			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (mon-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000 \$2.80 2 0.5 \$43 \$55 \$75 32 1,000,000	LS gpm LS gpm LS gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per ton per ton per ton per hour tons			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2,000 \$2,80 2 0,5 \$43 \$55 \$75 32 1,000,000 \$4,433,026	LS gpm LS gpm LS gpm gpm LS gpm gpm est			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; Settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2,000 \$2,80 2 0,5 \$43 \$55 \$75 32 1,000,000 \$4,433,026	LS gpm LS gpm LS gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000 \$2.80 2 0.5 \$43 \$55 \$75 32 1,000,000 \$4,433,026 140 \$5 \$100,000	LS gpm LS gpm LS gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Unit, Purchase (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment (QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2,80 2 0,55 \$43 \$55 \$75 32 1,000,000 \$4,433,026 140 \$5 \$100,000 \$500,000	LS gpm LS gpm LS gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per ton per hour tons LS acres per cy per acre per year			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000 \$2.80 2 0.5 \$43 \$55 \$75 32 1,000,000 \$4,433,026 140 \$5 \$100,000	LS gpm LS gpm LS gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per ton per hour tons LS acres per cy per acre per year			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment (QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost Post-closure Monitoring	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2,80 2 0,55 \$43 \$55 \$75 32 1,000,000 \$4,433,026 140 \$5 \$100,000 \$500,000	LS gpm LS gpm LS gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per ton per hour tons LS acres per cy per acre per year			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj pj pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment (QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost Post-closure Monitoring Institutional Controls	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,400 20,000 \$2.80 2 0.5 \$43 \$555 \$75 32 1,000,000 \$4,433,026 140 \$5 \$100,000 \$500,000 \$30,000	LS gpm LS gpm LS gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per ton per hour tons LS acres per cy per acre per year			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj pt
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost Post-closure Monitoring Institutional Controls Public Education Program	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2,80 2 0,55 \$43 \$555 \$75 32 1,000,000 \$4,433,026 140 \$5 \$100,000 \$500,000 \$30,000	LS gpm LS gpm LS gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per ton per hour tons LS acres per cy per acre per year			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj St. Paul St. Paul pj pj pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost Post-closure Monitoring Institutional Controls Public Education Program O&M Plans	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2,80 2 0,55 \$43 \$555 \$75 32 1,000,000 \$4,433,026 140 \$5 \$100,000 \$500,000 \$30,000 \$100,000	LS gpm LS gpm LS gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per ton per hour tons LS acres per cy per acre per year			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj pt
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges) Flow Rate (2-12-in Dredges) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost Post-closure Monitoring Institutional Controls Public Education Program O&M Plans Deed Restrictions	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2,80 2 0,55 \$43 \$555 \$75 32 1,000,000 \$4,433,026 140 \$5 \$100,000 \$500,000 \$30,000 \$100,000	LS gpm LS gpm LS gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per ton per hour tons LS acres per cy per acre per year			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj pj pj pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost Post-closure Monitoring Institutional Controls Public Education Program O&M Plans Deed Restrictions Annual Costs	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000 \$2.80 2 0.5 \$434 \$555 \$75 32 1,000,000 \$4,433,026 140 \$5 \$100,000 \$500,000 \$20,000	LS gpm LS gpm LS gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per ton per hour tons LS acres per cy per acre per year			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj pj pj pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost Post-closure Monitoring Institutional Controls Public Education Program O&M Plans Deed Restrictions Annual Costs Public Education Program	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000 \$2,80 2 0,5 \$43 \$555 \$75 32 1,000,000 \$4,433,026 140 \$5 \$100,000 \$500,000 \$30,000 \$100,000 \$5,000 \$30,000	LS gpm LS gpm LS gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per ton per hour tons LS acres per cy per acre per year			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj pj st. Paul St. Paul pj pj pj pj pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost Post-closure Monitoring Institutional Controls Public Education Program O&M Plans Deed Restrictions Annual Costs Public Education Program Maintaining O&M Plans	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000 \$2.80 2 0.5 \$43 \$555 \$75 32 1,000,000 \$4,433,026 140 \$5 \$100,000 \$500,000 \$30,000 \$100,000 \$20,000 \$30,000 \$30,000 \$30,000 \$30,000 \$30,000	LS gpm LS gpm LS gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per ton per hour tons LS acres per cy per acre per year			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj pj pj pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2 12-inch Dredges) Flow Rate (2-12-in Dredges) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost Post-closure Monitoring Institutional Controls Public Education Program O&M Plans Deed Restrictions Annual Costs Public Education Program Maintaining O&M Plans Reporting	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2,000 \$2,000 \$4,433,026 140 \$5 \$100,000 \$500,000 \$5100,000 \$100,000 \$20,000 \$30,000 \$30,000 \$30,000 \$30,000 \$30,000	LS gpm LS gpm LS gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per ton per hour tons LS acres per cy per acre per year			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj

Capital Items Deed Restrictions		Quantity	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Construc	tion Manageme	ent:		\$5,000 600
	Total Capital:		\$5,600		
Present Worth C Long-term Monitoring	of Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term O&	kM Costs			\$4,513,889
	Total Project Capital and O&M Co	st			\$4,500,000

ALTERNATIVE B: Monitored Natural Recovery

MONITORING/INSTITUTIONAL CONTROLS

Capital Items	Quantity	Units		Cost
Public Education Program	1	LS		\$100,000
O&M Plans	1	LS		\$20,000
Deed Restrictions	1	LS		\$5,000
Direct Capital:				\$125,000
Engineering, Procurem	ent & Construction Managem	ent:		15,000
Total Capital:				\$140,000
Present Worth of Longer Term Operati	ng Costs	Years	Annual Cost	
Long-term Monitoring		40	\$600,000	\$9,027,778
Public Education Program		40	\$30,000	\$451,389
Maintaining O&M Plans		40	\$800	\$12,037
Reporting		40	\$20,000	\$300,926
Total Present Worth, I	onger Term O&M Costs			\$9,792,130
Total Project Capital	and O&M Cost			\$9,900,000

ALTERNATIVE C1: Dredge Sediment With Disposal at Existing NR 500 Commercial Disposal Facility (Passive Dewatering)

SEDIMENT REMOVAL (10-INCH CUTTERHEAD)

Capital Items	Quantity	Units		Cost
Site Preparation	1	Each		\$100,000
Mobilization - Equipment and Silt Curtain	1	LS		\$170,000
Debris Sweep	665	ac		\$10,640,000
Dredging - 12 hour shifts	1116	Day	8.584615385	\$6,361,200
Dredge Monitoring (Water Quality)	1116	Day		\$3,348,000
Sediment Removal QA	1116	Day		\$1,339,200
Site Restoration	1	Each		\$600,000
Direct Capital:				\$22,558,400
Engineering, Procurement & Cor	struction Managem	ent:		2,707,008
Contractor Overhead/Profit:	· ·			3,383,760
Total Capital:				\$28,600,000

SEDIMENT DEWATERING (GRAVITY)

Capital Items	Quantity	Units	Cost
Land Lease or Purchase	636,049	sf	\$1,144,889
Mobilization	1	LS	\$20,000
Clear and Grub	636,049	sf	\$29,203
Berm Construction	33,083	cy	\$198,496
Rough Grading	636,049	sf	\$159,012
Liner Placement	636,049	sf	\$954,074
Demob/Disposal	1	LS	\$10,000
Regrade	33,083	cy	\$198,496
Seed/Sod	70,672	sy	\$70,672
D	irect Capital:		\$2,784,842
Er	ngineering, Procurement & Construction Manage	ment:	334,181
Te	otal Capital:		\$3,100,000

Capital Items	Quantity	Units	Cost
Unit Purchase	389	gpm	\$684,675
Water Treatment (Includes Operator)	874,587,113	gal	\$349,835
Water Treatment QA	1,563	day	\$312,600
Direct Capital:			\$1,347,110
1			
Engineering, Procurement & Construction Management:			161,653

SEDIMENT DISPOSAL (Existing NR 500 Commercial Disposal Facility)

Capital Items	Quantity	Units	Cost
Solidification	1,566,372	ton	\$39,159,300
Lime Purchase	156,638	ton	\$9,398,280
Soil Loading	1,566,372	ton	\$4,385,842
Soil Hauling	1,566,372	ton	\$7,342,369
Tipping Fees (non-TSCA)	1,566,372	ton	\$67,353,996

 Direct Capital:
 \$127,639,786

 Engineering, Procurement & Construction Management:
 15,316,774

\$1,500,000

Total Capital: \$143,000,000

INSTITUTIONAL CONTROLS

Capital Items	Quantity	Units	Cost
Deed Restrictions	1	LS	\$5,000
	Direct Capital: Engineering, Procurement & Construction Management	ent:	\$5,000 600
	Total Capital:		\$5,600

Present Worth of Longer Term Operating CostsYearsAnnual CostLong-term Monitoring (no action)40\$300,000\$4,513,889

Total Present Worth, Longer Term O&M Costs \$4,513,889

Total Project Capital and O&M Cost \$4,500,000

TOTAL COST \$180,700,000

ALTERNATIVE C2A: Dredge Sediment with Combined Dewatering and Disposal Facility

Total Capital:

SEDIMENT REMOVAL (12-INCH CUTTERHEAD)

Capital Items	Quantity	Units		Cost
Site Preparation	1	Each		\$803,400
Mobilization - Equipment and Silt Curtain	1	LS		\$1,170,000
Debris Sweep	665	ac		\$10,640,000
Dredging - 2 12-hour shifts	204	Day	1.120879121	\$5,793,600
Dredge Monitoring (Water Quality)	204	Day		\$1,224,000
Sediment Removal QA	204	Day		\$489,600
Piping	95,000	ft		\$6,365,000
Road Crossings	4	Each		\$200,000
Booster Pumps	4	Each		\$2,040,000
Winter Over All Equipment	1	year		\$285,000
Site Restoration	1	Each		\$600,000
Direct Capital:				\$29,610,600
F : : D	0 4 6 14			2,552,272

 Direct Capital:
 \$29,610,600

 Engineering, Procurement & Construction Management:
 3,553,272

 Contractor Overhead/Profit:
 4,441,590

Total Capital: \$37,600,000

Capital Items	Quantity	Units		Cost
Unit Purchase	3,505	gpm		\$2,561,265
Water Treatment (Includes Operator)	1,024,798,087	gal		\$409,919
Water Treatment QA Piping	204 20,000	day ft		\$81,600 \$1,340,000
Tiping	20,000	It		\$1,540,000
Direct Capital:				\$4,392,785
Engineering, Procu	rement & Construction Manageme	nt:		527,134
Total Capital:				\$4,900,000
	SEDIMENT DISPOSAL (I	Dedicated N	R 500 Monofill)	
Capital Items	Quantity	Units		Cost
Landfill Construction	1	LS		\$4,433,026
Local Siting Fee	783,664	cy		\$3,918,320
Closure	24	acres		\$2,428,711
Direct Capital:				\$10,780,057
Engineering, Procu	rement & Construction Manageme	nt:		1,293,607
Total Capital:				\$12,100,000
Total Capital.				\$12,100,000
Present Worth of Longer Term Open	rating Costs	Years	Annual Cost	\$2,690,044
Operations Post Closure Monitoring		10 40	\$500,000 \$30,000	\$3,680,044 \$451,389
Total Present Worth	1, Longer Term O&M Costs			\$4,131,432
Total Project Capi	ital and O&M Cost			\$16,200,000
	INSTITUTIO	NAL CON	TROLS	
Capital Items	Quantity	Units		Cost
Deed Restrictions	1	LS		\$5,000
Direct Capital:				\$5,000
Engineering, Procus	rement & Construction Manageme	nt:		600
Total Capital:				\$5,600
Present Worth of Longer Term Open Long-term Monitoring (no action)	rating Costs	Years 40	Annual Cost \$300,000	\$4,513,889
	I T ONNO		\$300,000	
Total Present Worth	n, Longer Term O&M Costs			\$4,513,889
Total Project Capi	ital and O&M Cost			\$4,500,000
TOTAL COST				\$63,200,000
TERNATIVE C2B: Dredge Sedime	nt with Separate Dewaterin	ng and Disp	osal Facility	
	SEDIMENT REMOVAL (12-INCH C	UTTERHEAD)	
Capital Items	Quantity	Units		Cost
Site Preparation	1	Each		\$803,400
Mobilization - Equipment and Silt Curtain Debris Sweep	1 665	LS ac		\$1,170,000 \$10,640,000
Dredging - 2 12-hour shifts	204	Day	1.120879121	\$5,793,600
Dredge Monitoring (Water Quality)	204	Day		\$1,224,000
Sediment Removal QA	204	Day		\$489,600
Piping Road Crossings	95,000 4	ft Each		\$6,365,000
Booster Pumps	4	Each Each		\$200,000 \$2,040,000
Winter Over All Equipment	1	year		\$285,000
Site Restoration	1	Each		\$600,000
Direct Capital:				620 (10 (00
Direct Capital.				\$29,610,600
	rement & Construction Manageme	nt:		3,553,272 4,441,590

Total Capital:

\$37,600,000

SEDIMENT DEWATERING (GRAVITY - NR 213)

			·	ŕ	
Capital Items		Quantity	Units		Cost
Land Lease or Purchase	a a	5,010,182	sf		\$9,018,328
Mobilization	~	1	LS		\$20,000
Clear and Grub		5,010,182	sf		\$230,036
Berm Construction		92,850	cy		\$557,099
Rough Grading		5,010,182	sf		\$1,252,545
Liner Placement		5,010,182	sf		\$7,515,273
Demob/Disposal		1	LS		\$10,000
Regrade		92,850	cy		\$557,099
Seed/Sod		556,687	sy		\$556,687
	Direct Capital:				\$10.717.067
	Direct Capital: Engineering, Procurement & Const	ruction Managem	ent:		\$19,717,067 2,366,048
	0,				
	Total Capital:				\$22,100,000
		WATER T	REATMENT	г	
Capital Items		Quantity	Units		Cost
Unit Purchase		2,991	gpm		\$2,561,265
Water Treatment (Inclu	ides Operator)	874,587,113	gal		\$349,835
Water Treatment QA	1	569	day		\$113,800
Piping		20,000	ft		\$1,340,000
	Direct Capital:				\$4,364,900
	Engineering, Procurement & Const	ruction Managem	ent:		523,788
	Total Capital:				\$4,900,000
	SEDIMENT	DISPOSAL (Dedicated N	R 500 Monofill)	
Capital Items		Quantity	Units		Cost
=		-			
Solidification		1,566,372	ton		\$39,159,300
Lime Purchase		156,638	ton		\$9,398,280
Sediment Loading		1,566,371	ton		\$4,385,839
Sediment Hauling		1,566,371	ton		\$7,342,365
Landfill Construction		1	LS		\$4,433,026
Local Siting Fee		783,664	cy		\$3,918,320
Closure		24	acres		\$2,428,711
Ciosure		24	acres		\$2,428,711
	B: (C : 1				671.075.040
	Direct Capital:		4-		\$71,065,840
	Engineering, Procurement & Const	ruction Managem	ent:		8,527,901
	Total Capital:				\$79,600,000
Present Worth	of Longer Term Operating Costs		Years	Annual Cost	
Operations			10	\$500,000	\$3,680,044
Post Closure Monitorin	ng		40	\$30,000	\$451,389
	Total Present Worth, Longer Term	O&M Costs			\$4,131,432
	Total Project Capital and O&M	Cost			\$83,700,000
			NAL CON	TOOLS	
		INSTITUTIO	JNAL CON	I KULS	
Capital Items		Quantity	Units		Cost
Deed Restrictions		1	LS		\$5,000
	Direct Capital:				\$5,000
	Engineering, Procurement & Const	ruction Managem	ent:		600
	Total Capital:				\$5,600
	-				30,000
Long-term Monitoring	of Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
_ 3		O&M Coat-		•	
	Total Present Worth, Longer Term				\$4,513,889
	Total Project Capital and O&M	Cost			\$4,500,000
	TOTAL COST				\$152,800,000
					. ,

ALTERNATIVE C3: Dredge with Disposal at Existing NR 500 Commercial Disposal Facility (Mechanical Dewatering)

SEDIMENT REMOVAL (10-INCH CUTTERHEAD)

Capital Items		Quantity	Units		Cost
Site Preparation		1	Each		\$100,000
Mobilization - Equipme	nt and Silt Curtain	1	LS		\$170,000
Debris Sweep Dredging - 12 hour shift		665 1116	ac Day	8.584615385	\$10,640,000 \$6,361,200
Dredge Monitoring (Wa		1116	Day	8.364013363	\$3,348,000
Sediment Removal QA	cer Quarry)	1116	Day		\$1,339,200
Site Restoration		1	Each		\$600,000
	Direct Capital:				\$22,558,400
	Engineering, Procurement & Constru Contractor Overhead/Profit:	action Manageme	ent:		2,707,008
	Contractor Overnead/Profit:				3,383,760
	Total Capital:				\$28,600,000
	SEDIMEN	T DEWATE	RING (MEC	CHANICAL)	
Capital Items		Quantity	Units		Cost
Mobilization/Site Prep		1	LS		\$100,000
Dewatering		469,911	bdt		\$37,592,907
	Direct Conital:				\$37,692,907
	Direct Capital: Engineering, Procurement & Constru	ection Manageme	ent.		4,523,149
	Engineering, Froedrement & Consuc	ection ivianageme	ant.		4,323,147
	Total Capital:				\$42,200,000
		WATED TI	REATMENT		
		WAIEKII	XEAT WIEN I	ı	
Capital Items		Quantity	Units		Cost
Unit Purchase Water Treatment (Include	es Operator)	456 1,024,798,087	gpm gal		\$1,380,892 \$409,919
Water Treatment QA	es operator)	1,563	day		\$312,600
	Direct Capital:				\$2,103,411
	Engineering, Procurement & Constru	action Manageme	ent:		252,409
	T . 10 . 1.				\$2,400,000
	Total Capital:				32,100,000
		.L (Existing N	R 500 Comr	nercial Disposal Facility)	52,100,000
Capital Items		,	R 500 Comr	nercial Disposal Facility)	Cost
Capital Items Soil Loading		L (Existing N Quantity 939,823		nercial Disposal Facility)	Cost
Capital Items Soil Loading Soil Hauling		Quantity	Units	nercial Disposal Facility)	
Soil Loading	SEDIMENT DISPOSA	Quantity 939,823	Units ton	nercial Disposal Facility)	Cost \$2,631,503
Soil Loading Soil Hauling	SEDIMENT DISPOSA	Quantity 939,823 939,823	Units ton ton	nercial Disposal Facility)	Cost \$2,631,503 \$4,405,419
Soil Loading Soil Hauling Tipping Fees (non-TSC)	SEDIMENT DISPOSA	Quantity 939,823 939,823 939,823	Units ton ton	nercial Disposal Facility)	Cost \$2,631,503 \$4,405,419 \$40,412,375
Soil Loading Soil Hauling Tipping Fees (non-TSC)	SEDIMENT DISPOSA	Quantity 939,823 939,823 939,823	Units ton ton	nercial Disposal Facility)	Cost \$2,631,503 \$4,405,419 \$40,412,375
Soil Loading Soil Hauling Tipping Fees (non-TSC)	SEDIMENT DISPOSA	Quantity 939,823 939,823 939,823 0	Units ton ton ton	nercial Disposal Facility)	Cost \$2,631,503 \$4,405,419 \$40,412,375 \$0
Soil Loading Soil Hauling Tipping Fees (non-TSC)	SEDIMENT DISPOSA A) Direct Capital:	Quantity 939,823 939,823 939,823 0	Units ton ton ton	nercial Disposal Facility)	Cost \$2,631,503 \$4,405,419 \$40,412,375 \$0 \$47,449,297
Soil Loading Soil Hauling Tipping Fees (non-TSC)	SEDIMENT DISPOSA A) Direct Capital: Engineering, Procurement & Constru	Quantity 939,823 939,823 939,823 0	Units ton ton ton	nercial Disposal Facility)	Cost \$2,631,503 \$4,405,419 \$40,412,375 \$0 \$47,449,297 5,693,916
Soil Loading Soil Hauling Tipping Fees (non-TSC)	SEDIMENT DISPOSA A) Direct Capital: Engineering, Procurement & Constru Total Capital:	Quantity 939,823 939,823 939,823 0	Units ton ton ton ton		Cost \$2,631,503 \$4,405,419 \$40,412,375 \$0 \$47,449,297 5,693,916
Soil Loading Soil Hauling Tipping Fees (non-TSC)	SEDIMENT DISPOSA A) Direct Capital: Engineering, Procurement & Constru Total Capital:	Quantity 939,823 939,823 939,823 0	Units ton ton ton ton		Cost \$2,631,503 \$4,405,419 \$40,412,375 \$0 \$47,449,297 5,693,916
Soil Loading Soil Hauling Tipping Fees (non-TSC Tipping Fees (TSCA)	SEDIMENT DISPOSA A) Direct Capital: Engineering, Procurement & Constru Total Capital:	Quantity 939,823 939,823 939,823 0 action Managements	Units ton ton ton ton ton tunt:		Cost \$2,631,503 \$4,405,419 \$40,412,375 \$0 \$47,449,297 5,693,916 \$53,100,000
Soil Loading Soil Hauling Tipping Fees (non-TSC Tipping Fees (TSCA)	SEDIMENT DISPOSA A) Direct Capital: Engineering, Procurement & Constru Total Capital: IN Direct Capital:	Quantity 939,823 939,823 939,823 0 action Managements	Units ton ton ton ton ton tunt:		Cost \$2,631,503 \$4,405,419 \$40,412,375 \$0 \$47,449,297 5,693,916 \$53,100,000 Cost \$5,000
Soil Loading Soil Hauling Tipping Fees (non-TSC. Tipping Fees (TSCA) Capital Items Deed Restrictions Present Worth of	SEDIMENT DISPOSA Direct Capital: Engineering, Procurement & Constru Total Capital: Engineering, Procurement & Constru Total Capital: Engineering, Procurement & Constru Total Capital: Longer Term Operating Costs	Quantity 939,823 939,823 939,823 0 action Managements	Units ton ton ton ton ent: AL CONTR Units LS ent:	OLS Annual Cost	Cost \$2,631,503 \$4,405,419 \$40,412,375 \$0 \$47,449,297 5,693,916 \$53,100,000 Cost \$5,000 600 \$5,600
Soil Loading Soil Hauling Tipping Fees (non-TSC. Tipping Fees (TSCA) Capital Items Deed Restrictions	SEDIMENT DISPOSA A) Direct Capital: Engineering, Procurement & Constru Total Capital: Engineering, Procurement & Constru Total Capital: Engineering, Procurement & Constru Total Capital: Longer Term Operating Costs no action)	Quantity 939,823 939,823 0 action Management STITUTION Quantity 1	Units ton ton ton ton ton ent: AL CONTR Units LS ent:	OLS	Cost \$2,631,503 \$4,405,419 \$40,412,375 \$0 \$47,449,297 5,693,916 \$53,100,000 \$5,000 600 \$5,600 \$4,513,889
Soil Loading Soil Hauling Tipping Fees (non-TSC. Tipping Fees (TSCA) Capital Items Deed Restrictions Present Worth of	SEDIMENT DISPOSA Direct Capital: Engineering, Procurement & Constru Total Capital: Engineering, Procurement & Constru Total Capital: Engineering, Procurement & Constru Total Capital: Longer Term Operating Costs no action) Total Present Worth, Longer Term C	Quantity 939,823 939,823 0 action Management STITUTION Quantity 1 action Management	Units ton ton ton ton ent: AL CONTR Units LS ent:	OLS Annual Cost	Cost \$2,631,503 \$4,405,419 \$40,412,375 \$0 \$47,449,297 5,693,916 \$53,100,000 Cost \$5,000 \$5,000 \$5,000 \$5,600 \$4,513,889
Soil Loading Soil Hauling Tipping Fees (non-TSC. Tipping Fees (TSCA) Capital Items Deed Restrictions Present Worth of	SEDIMENT DISPOSA A) Direct Capital: Engineering, Procurement & Constru Total Capital: Engineering, Procurement & Constru Total Capital: Engineering, Procurement & Constru Total Capital: Longer Term Operating Costs no action)	Quantity 939,823 939,823 0 action Management STITUTION Quantity 1 action Management	Units ton ton ton ton ent: AL CONTR Units LS ent:	OLS Annual Cost	Cost \$2,631,503 \$4,405,419 \$40,412,375 \$0 \$47,449,297 5,693,916 \$53,100,000 \$5,000 600 \$5,600 \$4,513,889

SEDIMENT REMOVAL (10-INCH CUTTERHEAD)

Capital Items Site Preparation Mobilization - Equipme Debris Sweep Dredging - 12 hour shif Dredge Monitoring (Wa Sediment Removal QA Site Restoration	its	Quantity 1 1 665 1116 1116 1116 1	Units Each LS ac Day Day Day Each	8.584615385	Cost \$100,000 \$170,000 \$10,640,000 \$6,361,200 \$3,348,000 \$1,339,200 \$600,000 \$22,558,400 2,707,008 3,383,760
		WATER T	REATMENT	Γ	
Capital Items Unit Purchase Water Treatment (Inclu Water Treatment QA	des Operator) Direct Capital: Engineering, Procurement & Cons	Quantity 456 1,024,798,087 1,563	Units gpm gal day		Cost \$752,984 \$409,919 \$312,600 \$1,475,503 177,060
	Total Capital:				\$1,700,000
	C	CDF CONSTRU	JCTION - M	IENASHA	
Capital Items Mobilization/Site Prep Shot Rock/Rip Rap Sheetpile Placement Clean Soil Cap Seeding Mitigation Present Worth o Mitigation Long-term Monitoring Long-term O&M	Direct Capital: Engineering, Procurement & Cons Total Capital: f Longer Term Operating Costs	Quantity 27,778 9,200 276,000 170,000 250,000 52 struction Management	Units sf If sf cy sy acre ent: Years 40 40 40	Annual Cost 10,000 650,000 338,700	Cost \$50,000 \$7,360,000 \$5,244,000 \$1,700,000 \$250,000 \$516,529 \$15,120,529 1,814,463 \$16,934,992 \$150,463 \$9,780,093 \$5,096,178
	Total Present Worth, Longer Term	n O&M Costs			\$15,026,734
	Total Project Capital and O&M	Cost			\$32,000,000
		INSTITUTIO	ONAL CON	ΓROLS	
Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Cons	struction Managemo	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth o	f Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term	n O&M Costs			\$4,513,889
	Total Project Capital and O&M	Cost			\$4,500,000
	TOTAL COST				\$66,800,000

ALTERNATIVE E: Dredge Sediment and Thermal Treatment

SEDIMENT REMOVAL (12-INCH CUTTERHEAD)

Capital Items	Quantity	Units		Cost
Site Preparation	1	Each		\$803,400
Mobilization - Equipment and Silt Curtain	1	LS		\$1,170,000
Debris Sweep	665	ac		\$10,640,000
Dredging - 2 12-hour shifts	204	Day	1.120879121	\$5,793,600
Dredge Monitoring (Water Quality)	204	Day		\$1,224,000
Sediment Removal QA	204	Day		\$489,600
Piping	95,000	ft		\$6,365,000
Road Crossings	4	Each		\$200,000
Booster Pumps	4	Each		\$2,040,000
Winter Over All Equipment	1	year		\$285,000
Site Restoration	1	Each		\$600,000
Direct Capital:				\$29,610,600
Engineering, Procurement & Co	onstruction Manageme	ent:		3,553,272
Contractor Overhead/Profit:				4,441,590
Total Capital:				\$37,600,000

SEDIMENT DEWATERING (GRAVITY)

Capital Items	Quantity	Units	Cost
Land Lease or Purchase	5,010,182	sf	\$9,018,328
Mobilization	1	LS	\$20,000
Clear and Grub	5,010,182	sf	\$230,036
Berm Construction	92,850	cy	\$557,099
Rough Grading	5,010,182	sf	\$1,252,545
Liner Placement	5,010,182	sf	\$7,515,273
Demob/Disposal	1	LS	\$10,000
Regrade	92,850	cy	\$557,099
Seed/Sod	556,687	sy	\$556,687
Direct Ca	pital:		\$19,717,067
Engineer	ing, Procurement & Construction Managem	ent:	2,366,048

Total Capital: \$22,100,000

WATER TREATMENT

Capital Items	Quantity	Units	Cost
Unit Purchase	2,991	gpm	\$2,561,265
Water Treatment (Includes Operator)	874,587,113	gal	\$349,835
Water Treatment QA	569	day	\$113,800
Piping	95,000	ft	\$6,365,000

 Direct Capital:
 \$9,389,000

 Engineering, Procurement & Construction Management:
 1,126,788

Total Capital: \$10,500,000

SEDIMENT TREATMENT (VITRIFICATION 2x375 t Standalone Storage Units)

Capital Items	Quantity	y Ur	nits	Cost
Sediment Treatment	1,566,371	l to	on	\$37,592,907
Soil Loading	1,566,371	l to	on	\$4,385,839
Soil Hauling	1,566,371	l to	on	\$1,835,591
	Direct Capital:			\$43,814,337
	Engineering, Procurement & Construction Management	gement:		\$5,257,720

Total Capital: \$49,100,000

Capital Items		Quantity	Units		Cost
Deed Restrictions		1	LS		\$5,000
	Direct Capital:				\$5,000
	Engineering, Procurement & Construc	ction Manageme	ent:		600
	Tatal Canital				65 (00
	Total Capital:				\$5,600
Present Worth	of Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring	(no action)		40	\$300,000	\$4,513,889
	Total Present Worth, Longer Term O&	&M Costs			\$4,513,889
	Total Project Capital and O&M Co	st			\$4,500,000
	TOTAL COST				\$123,800,000
	TOTAL COST				\$125,800,000

ALTERNATIVE F: Cap Sediment to Maximum Extent Possible, Dredge and Off-site Disposal

CAPPING

		-			
Capital Items		Quantity	Units		Cost
Mobilization/Site Prep		1	LS		\$200,000
Sand Purchase		877,636	tons		\$5,265,816
Sand Placement		626,883	cy		\$3,761,297
Cobble Purchase and P	lacement	376,130	cy		\$11,283,892
Cap Placement QA		ĺ	LS		\$100,000
	Direct Capital:				\$20,611,005
	Engineering, Procurement & Const	truction Managem	ent:		2,473,321
	Total Capital:				\$23,084,326
	of Longer Term Operating Costs		Years	Annual Cost	
Monitoring/O&M Long-term Monitoring			40	\$400,000	\$6,018,519
Long-term O&M			40	\$461,687	\$6,946,672
	Total Present Worth, Longer Term	O&M Costs			\$12,965,191
	Total Project Capital and O&M	Cost			\$36,000,000

SEDIMENT REMOVAL (10-INCH CUTTERHEAD)

Capital Items	Quantity	Units	Cost
Site Preparation	1	Each	\$100,000
Mobilization - Equipment and Silt Curtain	1	LS	\$170,000
Debris Sweep	665	ac	\$10,640,000
Dredging - 12 hour shifts	392	Day	\$2,234,400
Dredge Monitoring (Water Quality)	392	Day	\$1,176,000
Sediment Removal QA	392	Day	\$470,400
Site Restoration	1	Each	\$600,000
Direct Capital:			\$15,390,800
Engineering, Procurement & Cor	nstruction Managem	ent:	1,846,896
Contractor Overhead/Profit:			2,308,620
Total Capital:			\$19,500,000

SEDIMENT DEWATERING (GRAVITY)

Comital Itama	0	44. T	nits	Cost
Capital Items	Quant			
Land Lease or Purchase	636,04	149 sf		\$1,144,889
Mobilization	1	L	S	\$20,000
Clear and Grub	636,04	149 sf		\$29,203
Berm Construction	33,08	83 cy	1	\$198,496
Rough Grading	636,04	149 sf		\$159,012
Liner Placement	636,04	149 sf		\$954,074
Demob/Disposal	1	L	S	\$10,000
Regrade	33,08	83 cy	1	\$198,496
Seed/Sod	70,67	72 sy	,	\$70,672
	Direct Capital:			\$2,784,842
	Engineering, Procurement & Construction Ma	anagement:		334,181

Total Capital: \$3,100,000

Capital Items Unit Purchase		Quantity 389	Units gpm		Cost \$684,675
Water Treatment (Inclu	des Operator)	306,859,461	gal		\$122,744
Water Treatment QA		549	Day		\$109,800
					,
	Direct Capital:				\$917,219
	Engineering, Procurement & Consti	ruction Manageme	ent:		110,066
	Total Capital:				\$1,000,000
SEDIMENT DISPOSAL (E	xisting NR 500 Commercial Disposal	Facility)			
	SED	IMENT DISP	OSAL (OFF	-SITE)	
Capital Items		Quantity	Units		Cost
Solidification		549,581	ton		\$13,739,525
Lime Purchase		54,959	ton		\$3,297,540
Soil Loading		549,581	ton		\$1,538,827
Soil Hauling		549,581	ton		\$2,576,161
Tipping Fees (non-TSC	(A)	549,581	ton		\$23,631,983
	Direct Capital:				\$44,784,036
	Engineering, Procurement & Consti	ruction Manageme	ent:		5,374,084
	Total Capital:				\$50,200,000
		INSTITUTIO	ONAL CONT	ROLS	
Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital:				\$5,000
	Engineering, Procurement & Constr	ruction Manageme	ent:		600
	T-4-1 Ci4-1				65 (00
	Total Capital:				\$5,600
Present Worth o	f Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring	(no action)		40	\$300,000	\$4,513,889
	Total Present Worth, Longer Term	O&M Costs			\$4,513,889
	Total Project Capital and O&M	Cost			\$4,500,000
	TOTAL COST				****
	TOTAL COST				\$114,300,000

BASIS FOR PRELIMINARY COST ESTIMATES

SEDIMENT REMEDIATION

FOX RIVER, WISCONSIN LITTLE RAPIDS TO DE PERE

Action Level - 500 ppb

Material Handling Assumptions: Volume > 500 ppb	776,791 cy 498 ac 592	970 m3 Acres corresponds to dredge
Volume > 125 ppb		180 m3 Acres corresponds to diedge
Volume > 250 ppb		340 m3
Volume > 1,000 ppb		930 m3
Volume > 5000 ppb		250 m3
Volume > 50,000 ppb	0 cy	0 m3
Solids Specific Gravity	2.47	
Fresh Water Density	62.4 lb/ft3	
In Situ Density		08 tons per cy
Slurry Density (20% in situ)		89 tons per cy Ogden Beeman
Dewatered Density (settling pond)		.03 tons per cy Montgomery Watson
Dewatered Density (CDF or landfill) Treated Density		20 tons per cy Foth & VanDyke 33 tons per cy
HTTD Treatment Capacity		000 tons
Cap Volume		220 m3
Vitrification Treatment Capacity		00 tons
Cost Estimating Parameters & Methodology:	6.007	
Interest Rate	6.0% 5.5%	Not Used
Sales Tax Engineering, Procurement and Construction Mgmt	12.0%	Not Used
Contractor Overhead and Profit - Dredging Only	15.0%	
Dredging	13.070	
Debris Sweep	\$16,000 per acre	Ogden Beeman
Dredge Monitoring (Water Quality)	\$3,000 per day	3
Sediment Removal QA	\$1,200 per day	
Hydraulic - 10-inch Cutterhead		
Site Preparation	\$100,000 per dredge launch site	рj
Mobilization - Equipment	\$135,000 per dredge	Ogden Beeman
Mobilization - Silt Curtain	\$35,000	Ogden Beeman
Shift Rate (10 hours)	\$5,700 per shift	Ogden Beeman
Dredge Rate	1050 cy in situ per 10 hour shift	Ogden Beeman
Site Restoration Hydraulic - 2 12-inch Cutterheads	\$600,000 per dredge launch site	pj
Site Preparation	\$803,400 LS	Ogden Beeman
Mobilization - Equipment	\$1,135,000 LS	Ogden Beeman
Mobilization - Silt Curtain	\$35,000	Ogden Beeman
Shift Rate (12 hours)	\$14,200 per shift	Ogden Beeman
Dredge Rate	2885 cy in situ per 12 hour shift	Ogden Beeman
Winter Over Equipment	\$285,000 per year	Ogden Beeman
Site Restoration	\$600,000 per dredge launch site	
Length of Piping	95,000 ft 18 mi	Distance to Town of Holland (map
		provded by Fred Swed) 11 mi of
		hard piping plus 7 mi of floating pipe
Piping Purchase/Installation	\$67 per ft	Ogden Beeman
Number of Road Crossings	4 each	pj, review map
Cost per Road Crossing	\$50,000 per crossing	pj, review map
Number of Booster Pumps	4 each	Ogden Beeman
Booster Pump Cost	\$2,500 per day	Ogden Beeman
High Temperature Thermal Desorption		
Setup Staging Area	\$50,000	рj
Mobilization/Site Prep	\$150,000	Maxymillian
Sediment Treatment QA	\$2 per ton	
Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver	0.25 :1 \$6 per ton	Ole
Blending	\$25 per ton	Ole
HTTD (includes off-gas treatment)	\$75 per ton	Maxymillian
Stack Testing	\$50,000 LS	Maxymillian
Place Treated Material	\$3 per ton	,
Vitrification		
Capital Costs	\$36,000,000 LS	Unit Cost Study- Minergy
Operating Costs	\$6,800,000 per year	Unit Cost Study- Minergy
Vitrification (Unit Cost includes Cap and Oper Costs)	\$24.0 per ton	Unit Cost Study- Minergy
Capping Mobilization/Site Prep	\$200,000	Ogden Beeman
Area	8,117,944 sf 754,200	m2
Sand Cap Depth	1.7 feet	
Placement Rate	\$6 per cy	Ogden Beeman
Sand Purchase	\$6 per ton	Ole
Sand Density	1.4 tons per cy	
Armored Cap Depth Cobbles	1.0 feet \$30 per cy	Means
Cap Placement QA	\$100,000 LS	Ogden Beeman
Long-term O&M	2% of capital	pj
Long-term Monitoring	\$400,000 per year	Anne LTM

Nearshore CDF					
	Arrowhead		<u>Menasha</u>		
Land Lease or Purchase		per sf	\$1.8		Ole
Length	8,000		9,200		Baird
Capping Volume	190,000	•	170,000		Baird
Seeding Area	280,000		250,000		Baird
Sheetpile Wall Length	8,000		9,200		Baird
Sheetpile Depth	30		30		based on bathymetry
Sheetpile Cost Shot Rock Berm		per sf	\$19 \$550		pj Bojrd
		per lf per lf	\$250 \$250		Baird Baird
Rip Rap Place Treated Material		per cy	\$230 \$2		
Clean Soil Cap		per cy	\$10		pj Baird
Seeding		per cy per sy	\$1		Baird
Mitigation	\$10,000		ψ1		Tim
witigation	\$10,000				Tim
Long-term Monitoring	\$650,000				Anne LTM
Long-term O&M		of capital			pj
Solidification	270	or cupital			Ю
Percent Lime	10.0%	(w/w)			Montgomery Watson
Lime		per ton	Mixing	\$25 per ton	pj, pug mill mixing
			8		1371 0
Dewatering - Upland Pond (2 cells)					
Land Lease or Purchase	\$1.80	per sf			Ole
Area (1050 cy dredge rate)	636,049	sf			2 days slurry + 13 wk solids * 2 cell
Perimeter (1050 cy dredge rate)	3,190	lf			assume square
Area (2885 cy dredge rate)	5,010,182	sf			2 days slurry + 13 wk solids * 2
					cells * 2 shifts per day
Perimeter (2885 cy dredge rate)	8,953				assume square
Depth of Material in Dewatering Cell		feet			based on size at Arrowhead Park
Cell Retention Time		hours			Not Used
Cell Depth		feet			
Mobilization	\$20,000				pj
Clear and Grub		per acre			pj
Berm Volume		cy per lf			2:1 slope, 8-foot top
Berm Construction		per cy			pj
Rough Grading		per sf			рј
Asphalt Liner		per sf			pj, 2 2-inch lifts
Demob/Disposal	\$10,000				pj
Regrade Berm Soils		per cy			pj B
Seed/Sod	\$1	per sy			Baird
Dewatering - Mechanical	6100 000				
Mobilization	\$100,000				pj Clahal Dawatanina
Holding Pond-Centrifuge	\$80	per bone dry ton			Global Dewatering
Water Treatment Flow Rate (1 10-inch Dredge; settling pond)	200	ann.			agguma aparata 24/7
Unit, Purchase (1 10-inch Dredge; settling pond)	\$684,675	gpm			assume operate 24/7
Flow Rate (1 10-inch Dredge; CDF)					pJ
					accuma aparata 24/7
		gpm 1 S			assume operate 24/7
Unit, Purchase (1 10-inch Dredge; CDF)	\$752,984	LS			рj
Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges)	\$752,984 3,505	LS gpm			pj assume operate 24/7
Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges)	\$752,984 3,505 \$2,561,265	LS gpm LS			pj assume operate 24/7 pj
Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond)	\$752,984 3,505 \$2,561,265 2,991	LS gpm LS gpm			pj assume operate 24/7
Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering)	\$752,984 3,505 \$2,561,265 2,991 1,252	LS gpm LS gpm gpm			pj assume operate 24/7 pj
Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering)	\$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892	LS gpm LS gpm gpm LS	s		pj assume operate 24/7 pj assume operate 24/7
Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering)	\$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40	LS gpm LS gpm gpm gpm LS per 1,000 gallons	ŝ		pj assume operate 24/7 pj assume operate 24/7
Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator)	\$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40	LS gpm LS gpm gpm gpm LS per 1,000 gallon: per day	S		pj assume operate 24/7 pj assume operate 24/7
Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA	\$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200	LS gpm LS gpm gpm gpm LS per 1,000 gallon: per day	3		pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day
Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge	\$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200	LS gpm LS gpm gpm gpm LS per 1,000 gallon: per day	s		pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to
Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial)	\$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000	LS gpm LS gpm gpm LS per 1,000 gallon: per day feet	S		pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed
Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (enchanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling	\$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000	LS gpm LS gpm gpm gpm LS per 1,000 gallon: per day feet	S		pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj
Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling	\$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000	LS gpm LS gpm gpm gpm tLS per 1,000 gallon: per day feet	S		pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed
Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (e-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility)	\$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000 \$2,80 2	LS gpm LS gpm gpm LS per 1,000 gallon: per day feet per ton hours hours	S		pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj
Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA)	\$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2.80 2 0.5 \$43	LS gpm LS gpm gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton	s		pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul
Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA)	\$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000 \$2,80 2 0.55 \$43	LS gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours per ton per ton per ton per ton per ton per ton	3		pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul
Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (e-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate	\$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000 \$2,000 \$2.80 2 0.5 \$43 \$555 \$75	LS gpm LS gpm gpm LS per 1,000 gallon: per day feet per ton hours hours per ton per ton per hour	S		pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj
Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (e-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load	\$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000 \$2,000 \$2,80 2 0.5 \$43 \$55 \$75 32	LS gpm LS gpm gpm LS per 1,000 gallon: per day feet per ton hours hours per ton per ton per ton per ton per ton per hour tons	S		pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj St. Paul St. Paul pj pj
Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction	\$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000 \$2,000 \$2.80 2 0.5 \$43 \$555 \$75	LS gpm LS gpm gpm LS per 1,000 gallon: per day feet per ton hours hours per ton per ton per ton per ton per ton per hour tons	S		pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj
Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill	\$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2.80 2 0.5 \$43 \$555 \$75 32 1,000,000	LS gpm LS gpm gpm LS per 1,000 gallon: per day feet per ton hours hours per ton per ton per ton per ton per ton per hour tons	s		pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj St. Paul St. Paul pj pj
Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction	\$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$2000 20,000 \$2,80 2 0.5 \$43 \$555 \$75 32 1,000,000	LS gpm LS gpm gpm LS per 1,000 gallon: per day feet per ton hours hours per ton per ton per ton per ton tons LS	S		pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj St. Paul St. Paul pj pj
Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area	\$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000 \$2,000 \$2,80 2 0,5 \$43 \$55 \$75 32 1,000,000 \$2,939,208	LS gpm LS gpm gpm LS per 1,000 gallon: per day feet per ton hours hours per ton per ton per ton per hour tons LS	S		pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj St. Paul St. Paul pj pj
Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (e-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee	\$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000 \$2,000 \$2,80 2 0.5 \$43 \$555 \$75 32 1,000,000 \$2,939,208 140 \$5	LS gpm LS gpm gpm LS per 1,000 gallon: per day feet per ton hours hours per ton per ton per hour tons LS acres per cy	S		pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj St. Paul St. Paul pj pj
Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (e-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap	\$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2,80 2 0.5 \$43 \$555 \$75 32 1,000,000 \$2,939,208 140 \$5 \$100,000	LS gpm LS gpm gpm LS per 1,000 gallon: per day feet per ton hours hours per ton per ton per hour tons LS acres per cy per acre	S		pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj St. Paul St. Paul pj pj
Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (e-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost	\$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2,80 2 0.5 \$43 \$555 \$75 32 1,000,000 \$2,939,208 140 \$5 \$1100,000 \$500,000	LS gpm LS gpm gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per tons LS acres per cy per acre per year	s		pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj St. Paul St. Paul pj pj
Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost Post-closure Monitoring	\$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2,80 2 0.5 \$43 \$555 \$75 32 1,000,000 \$2,939,208 140 \$5 \$100,000	LS gpm LS gpm gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per tons LS acres per cy per acre per year	S		pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj St. Paul St. Paul pj pj
Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (e-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost	\$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2,80 2 0.5 \$43 \$555 \$75 32 1,000,000 \$2,939,208 140 \$5 \$1100,000 \$500,000	LS gpm LS gpm gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per tons LS acres per cy per acre per year	3		pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj St. Paul St. Paul pj pj pj
Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (e-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost Post-closure Monitoring Institutional Controls	\$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000 \$2,80 2 0,5 \$43 \$555 \$75 32 1,000,000 \$2,939,208 140 \$5 \$100,000 \$500,000 \$330,000	LS gpm LS gpm gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per tons LS acres per cy per acre per year	5		pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj St. Paul St. Paul pj pj pj
Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost Post-closure Monitoring Institutional Controls Public Education Program	\$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2,80 2 0.5 \$43 \$555 \$75 32 1,000,000 \$2,939,208 140 \$5 \$100,000 \$500,000 \$30,000	LS gpm LS gpm gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per tons LS acres per cy per acre per year	S		pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj pj pj pj
Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (e-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost Post-closure Monitoring Institutional Controls Public Education Program O&M Plans	\$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2,80 2 0.5 \$43 \$555 \$75 32 1,000,000 \$2,939,208 140 \$5 \$100,000 \$500,000 \$100,000	LS gpm LS gpm gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per tons LS acres per cy per acre per year	S		pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj St. Paul St. Paul pj pj pj
Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost Post-closure Monitoring Institutional Controls Public Education Program O&M Plans Deed Restrictions	\$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2,80 2 0.5 \$43 \$555 \$75 32 1,000,000 \$2,939,208 140 \$5 \$100,000 \$500,000 \$100,000	LS gpm LS gpm gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per tons LS acres per cy per acre per year	S		pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj pj pj pj
Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost Post-closure Monitoring Institutional Controls Public Education Program O&M Plans Deed Restrictions Annual Costs	\$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000 \$2,80 2 0,5 \$43 \$555 \$75 32 1,000,000 \$2,939,208 140 \$5 \$100,000 \$500,000 \$30,000 \$100,000 \$20,000	LS gpm LS gpm gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per tons LS acres per cy per acre per year	3		pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj St. Paul St. Paul pj pj pj pj
Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost Post-closure Monitoring Institutional Controls Public Education Program O&M Plans Deed Restrictions Annual Costs Public Education Program Maintaining O&M Plans Reporting	\$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000 \$2,000 \$2,000 \$2,000 \$2,000 \$2,000 \$2,000 \$2,000 \$30,000 \$100,000 \$5,000 \$30,000 \$30,000	LS gpm LS gpm gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per tons LS acres per cy per acre per year	5		pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj pj pj pj pj
Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost Post-closure Monitoring Institutional Controls Public Education Program O&M Plans Deed Restrictions Annual Costs Public Education Program Maintaining O&M Plans Reporting Long-term Monitoring	\$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000 \$2,80 2,000 \$2,80 2,000 \$2,939,208 140 \$5 \$1,000,000 \$2,939,208 140 \$5 \$100,000 \$5,500,000 \$30,000 \$30,000 \$30,000 \$30,000 \$30,000 \$30,000 \$30,000 \$30,000 \$30,000	LS gpm LS gpm gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per tons LS acres per cy per acre per year	S		pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj St. Paul St. Paul pj Anne LTM
Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost Post-closure Monitoring Institutional Controls Public Education Program O&M Plans Deed Restrictions Annual Costs Public Education Program Maintaining O&M Plans Reporting	\$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$2000 20,000 \$2,80 2 0.5 \$43 \$555 \$75 32 1,000,000 \$2,939,208 140 \$5 \$100,000 \$500,000 \$500,000 \$5,000 \$30,000 \$30,000 \$30,000 \$5,0000	LS gpm LS gpm gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per tons LS acres per cy per acre per year	S		pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj pj pj pj pj

Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	virect Capital: ngineering, Procurement & Constructi	on Managemer	nt:		\$5,000 600
Te	Total Capital:				
Present Worth of Lo Long-term Monitoring (no a	onger Term Operating Costs action)		Years 40	Annual Cost \$300,000	\$4,513,889
To	otal Present Worth, Longer Term O&!	M Costs			\$4,513,889
To	otal Project Capital and O&M Cost				\$4,500,000

ALTERNATIVE B: Monitored Natural Recovery

MONITORING/INSTITUTIONAL CONTROLS

Capital Items	Quantity	Units		Cost
Public Education Program	1	LS		\$100,000
O&M Plans	1	LS		\$20,000
Deed Restrictions	1	LS		\$5,000
Direct Capital:				\$125,000
Engineering, Procurement & Cor	struction Managem	ent:		15,000
Total Capital:				\$140,000
Present Worth of Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring		40	\$600,000	\$9,027,778
Public Education Program		40	\$30,000	\$451,389
Maintaining O&M Plans		40	\$800	\$12,037
Reporting		40	\$20,000	\$300,926
Total Present Worth, Longer Ter	m O&M Costs			\$9,792,130
Total Project Capital and O&N	A Cost			\$9,900,000

ALTERNATIVE C1: Dredge Sediment With Disposal at Existing NR 500 Commercial Disposal Facility (Passive Dewatering)

SEDIMENT REMOVAL (10-INCH CUTTERHEAD)

Capital Items	Quantity	Units		Cost
Site Preparation	1	Each		\$100,000
Mobilization - Equipment and Silt Curtain	1	LS		\$170,000
Debris Sweep	498	ac		\$7,968,000
Dredging - 12 hour shifts	740	Day	5.692307692	\$4,218,000
Dredge Monitoring (Water Quality)	740	Day		\$2,220,000
Sediment Removal QA	740	Day		\$888,000
Site Restoration	1	Each		\$600,000
Direct Capital:				\$16,164,000
Engineering, Procurement & Co.	nstruction Managem	ent:		1,939,680
Contractor Overhead/Profit:				2,424,600
Total Capital:				\$20,500,000

SEDIMENT DEWATERING (GRAVITY)

Capital Items	Quantity	Units	Cost
Land Lease or Purchase	636,049	sf	\$1,144,889
Mobilization	1	LS	\$20,000
Clear and Grub	636,049	sf	\$29,203
Berm Construction	33,083	cy	\$198,496
Rough Grading	636,049	sf	\$159,012
Liner Placement	636,049	sf	\$954,074
Demob/Disposal	1	LS	\$10,000
Regrade	33,083	cy	\$198,496
Seed/Sod	70,672	sy	\$70,672
Direct Capital:			\$2,784,842
Engineering, Pro	ocurement & Construction Management	ent:	334,181
Total Capital:			\$3,100,000

Capital Items	Quantity	Units	Cost
Unit Purchase	389	gpm	\$684,675
Water Treatment (Includes Operator)	579,873,337	gal	\$231,949
Water Treatment QA	1,036	day	\$207,200
Direct Capital:			\$1,123,825
Engineering, Procurement	& Construction Manageme	nt:	134,859

SEDIMENT DISPOSAL (Existing NR 500 Commercial Disposal Facility)

Capital Items	Quantity	Units	Cost
Solidification	1,038,544	ton	\$25,963,600
Lime Purchase	103,855	ton	\$6,231,300
Soil Loading	1,038,544	ton	\$2,907,923
Soil Hauling	1,038,544	ton	\$4,868,175
Tipping Fees (non-TSCA)	1,038,544	ton	\$44,657,392

Direct Capital: \$84,628,390
Engineering, Procurement & Construction Management: 10,155,407

\$1,300,000

Total Capital: \$94,800,000

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Construction Management:				\$5,000 600
	Total Capital:				\$5,600
Present Worth	f Longer Term Operating Costs		Years	Annual Cost	

 Long-term Monitoring (no action)
 40
 \$300,000
 \$4,513,889

 Total Present Worth, Longer Term O&M Costs
 \$4,513,889

Total Project Capital and O&M Cost \$4,500,000

TOTAL COST \$124,200,000

ALTERNATIVE C2A: Dredge Sediment with Combined Dewatering and Disposal Facility

Total Capital:

SEDIMENT REMOVAL (12-INCH CUTTERHEAD)

Capital Items	Quantity	Units		Cost
Site Preparation	1	Each		\$803,400
Mobilization - Equipment and Silt Curtain	1	LS		\$1,170,000
Debris Sweep	498	ac		\$7,968,000
Dredging - 2 12-hour shifts	135	Day	0.741758242	\$3,834,000
Dredge Monitoring (Water Quality)	135	Day		\$810,000
Sediment Removal QA	135	Day		\$324,000
Piping	95,000	ft		\$6,365,000
Road Crossings	4	Each		\$200,000
Booster Pumps	4	Each		\$1,350,000
Winter Over All Equipment	1	year		\$285,000
Site Restoration	1	Each		\$600,000
Direct Capital:				\$23,709,400
Engineering, Procurement & Co	2,845,128			
Contractor Overhead/Profit:	C			3,556,410

Total Capital: \$30,100,000

	WAIEKII	CEAT MEN	•	
Capital Items	Quantity	Units		Cost
Unit Purchase	3,505	gpm		\$2,561,265
Water Treatment (Includes Operator)	679,467,005	gal		\$271,787
Water Treatment QA	135 20,000	day ft		\$54,000 \$1,340,000
Piping	20,000	11		\$1,540,000
Direct Capital:				\$4,227,052
Engineering, Procurement &	& Construction Manageme	ent:		507,246
Total Capital:				\$4,700,000
SEDIM	MENT DISPOSAL (I	Dedicated N	R 500 Monofill)	
Capital Items	Quantity	Units		Cost
Landfill Construction	1	LS		\$2,939,208
Local Siting Fee	519,589	cy		\$2,597,945
Closure	16	acres		\$1,610,296
Direct Capital:				\$7,147,450
Engineering, Procurement &	c Construction Manageme	ent:		857,694
Total Capital:				\$8,000,000
Present Worth of Longer Term Operating C	osts	Years	Annual Cost	
Operations Post Closure Monitoring		10 40	\$500,000 \$30,000	\$3,680,044 \$451,389
· ·			Ψ30,000	
Total Present Worth, Longe	r Term O&M Costs			\$4,131,432
Total Project Capital and	O&M Cost			\$12,100,000
	INSTITUTIO	ONAL CONT	ΓROLS	
Capital Items	Quantity	Units		Cost
Deed Restrictions	1	LS		\$5,000
Direct Capital: Engineering, Procurement &	& Construction Manageme	ent:		\$5,000 600
Total Capital:				\$5,600
Present Worth of Longer Term Operating C Long-term Monitoring (no action)	osts	Years 40	Annual Cost \$300,000	\$4,513,889
	Town Old Contr		\$300,000	
Total Present Worth, Longe				\$4,513,889
Total Project Capital and	O&M Cost			\$4,500,000
TOTAL COST				\$51,400,000
LTERNATIVE C2B: Dredge Sediment with	n Separate Dewateri	ng and Disp	osal Facility	
SEDI	MENT REMOVAL (12-INCH C	UTTERHEAD)	
Capital Items	Quantity	Units		Cost
Site Preparation Mobilization - Equipment and Silt Curtain	1 1	Each LS		\$803,400 \$1,170,000
Debris Sweep	498	ac		\$7,968,000
Dredging - 2 12-hour shifts	135	Day	0.741758242	\$3,834,000
Dredge Monitoring (Water Quality)	135	Day		\$810,000
Sediment Removal QA	135	Day		\$324,000 \$6.365,000
Piping Road Crossings	95,000 4	ft Each		\$6,365,000 \$200,000
Booster Pumps	4	Each		\$1,350,000
Winter Over All Equipment	1	year		\$285,000
Site Restoration	1	Each		\$600,000
Direct Capital:				\$23,709,400
Engineering, Procurement &		ent:		2,845,128
Contractor Overhead/Profit				3,556,410

Total Capital:

\$30,100,000

SEDIMENT DEWATERING (GRAVITY - NR 213)

	SEDIMEN	DEWAILK	ING (GKAV	111 - NK 213)	
Capital Items		Quantity	Units		Cost
Land Lease or Purchase		5,010,182	sf		\$9,018,328
Mobilization		1	LS		\$20,000
Clear and Grub		5,010,182	sf		\$230,036
Berm Construction		92,850	cy		\$557,099
Rough Grading		5,010,182	sf		\$1,252,545
Liner Placement		5,010,182	sf		\$7,515,273
Demob/Disposal		1	LS		\$10,000
Regrade		92,850	cy		\$557,099
Seed/Sod		556,687	sy		\$556,687
	Direct Capital:				\$19,717,067
	Engineering, Procurement & Consti	ruction Manageme	ent:		2,366,048
	Total Capital:				\$22,100,000
		WATER TI	REATMENT	?	
Capital Items		Quantity	Units		Cost
Unit Purchase		2,991	gpm		\$2,561,265
Water Treatment (Inclu-	des Operator)	579,873,337	gal		\$231,949
Water Treatment QA		377	day		\$75,400
Piping		20,000	ft		\$1,340,000
	Direct Capital:				\$4,208,615
	Engineering, Procurement & Const	ruction Managem	ent:		505,034
	Total Capital:				\$4,700,000
	SEDIMENT	DISPOSAL (I	Dedicated N	R 500 Monofill)	
Capital Items		Quantity	Units		Cost
Solidification		-	ton		
		1,038,544			\$25,963,600
Lime Purchase		103,855	ton		\$6,231,300
Sediment Loading		1,038,544	ton		\$2,907,922
Sediment Hauling		1,038,544	ton		\$4,868,173
Landfill Construction		1	LS		\$2,939,208
Local Siting Fee		519,589	cy		\$2,597,945
Closure		16	acres		\$1,610,296
					, ,, ,,
	Direct Capital:				\$47,118,445
	Engineering, Procurement & Constr	ruction Manageme	ent:		5,654,213
	Total Canital				\$52,800,000
	Total Capital:				352,800,000
Present Worth o	f Longer Term Operating Costs		Years	Annual Cost	
Operations Post Closure Monitoring	9		10 40	\$500,000 \$30,000	\$3,680,044 \$451,389
		00110		,,	
	Total Present Worth, Longer Term	O&M Costs			\$4,131,432
	Total Project Capital and O&M (Cost			\$56,900,000
		INSTITUTIO	ONAL CONT	TROLS	
Capital Items		Quantity	Units		Cost
Deed Restrictions		1	LS		\$5,000
	Direct Capital:				\$5,000
	Engineering, Procurement & Consti	ruction Managem	ent:		600
	Total Capital:				\$5,600
Present Worth o Long-term Monitoring (f Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term	O&M Costs			\$4,513,889
	_				
	Total Project Capital and O&M (Just			\$4,500,000
	TOTAL COST				\$118,300,000

ALTERNATIVE C3: Dredge with Disposal at Existing NR 500 Commercial Disposal Facility (Mechanical Dewatering)

SEDIMENT REMOVAL (10-INCH CUTTERHEAD)

			•	· ·	
Capital Items		Quantity	Units		Cost
Site Preparation		1	Each		\$100,000
Mobilization - Equipme	ent and Silt Curtain	1	LS		\$170,000
Debris Sweep	A-a	498 740	ac	5.692307692	\$7,968,000 \$4,218,000
Dredging - 12 hour shift Dredge Monitoring (Wa		740	Day Day	3.092307092	\$2,220,000
Sediment Removal QA	* */	740	Day		\$888,000
Site Restoration		1	Each		\$600,000
	Direct Capital:				\$16,164,000
	Engineering, Procurement & Contractor Overhead/Profit:	Construction Managem	ent:		1,939,680
	Contractor Overnead/Profit:				2,424,600
	Total Capital:				\$20,500,000
	SED	IMENT DEWATE	RING (MEC	CHANICAL)	
Capital Items		Quantity	Units		Cost
Mobilization/Site Prep Dewatering		1 311,563	LS bdt		\$100,000 \$24,925,046
Dewatering		311,303	bat		\$24,925,040
	Direct Capital:				\$25,025,046
	Engineering, Procurement &	Construction Management	ent:		3,003,006
	Total Capital:				\$28,000,000
		WATER TI	REATMENT	•	
		WATER	KENT MEN		
Capital Items		Quantity	Units		Cost
Unit Purchase Water Treatment (Inclu	idas (Prarator)	456 679,467,005	gpm		\$1,380,892 \$271,787
Water Treatment QA	ides Operator)	1,036	gal day		\$207,200
		,			,
	Direct Capital:				\$1,859,879
	Engineering, Procurement &	Construction Manageme	ent:		223,185
	Total Capital:				\$2,100,000
	SEDIMENT DIS	POSAL (Existing N	R 500 Com	nercial Disposal Facility)	
Capital Items		Quantity	Units		Cost
Soil Loading		623,126	ton		\$1,744,753
Soil Hauling		623,126	ton		\$2,920,904
Tipping Fees (non-TSC	CA)	623,126	ton		\$26,794,425
Tipping Fees (TSCA)	<i>)</i>	0	ton		\$0
ripping rees (150.1)		Ü	1011		40
	Direct Capital:				\$31,460,082
	Engineering, Procurement &	Construction Manageme	ent:		3,775,210
	Total Capital:				\$35,200,000
		INSTITUTION	AL CONTR	OLS.	
				OLD.	
Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement &	Construction Manageme	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth o	of Longer Term Operating Co	osts	Years	Annual Cost	
Long-term Monitoring			40	\$300,000	\$4,513,889
	Total Present Worth, Longer	Term O&M Costs			\$4,513,889
	Total Project Capital and C	D&M Cost			\$4,500,000
	TOTAL COST				\$90,300,000

SEDIMENT REMOVAL (10-INCH CUTTERHEAD)

	SEDIME	(T KEMOVAL)	(10-Invente	o i i ekilend)	
Capital Items		Quantity	Units		Cost
Site Preparation		1	Each		\$100,000
Mobilization - Equipme	ent and Silt Curtain	1	LS		\$170,000
Debris Sweep		498	ac		\$7,968,000
Dredging - 12 hour shif		740	Day	5.692307692	\$4,218,000
Dredge Monitoring (Wa	ater Quality)	740	Day		\$2,220,000
Sediment Removal QA		740	Day		\$888,000
Site Restoration		1	Each		\$600,000
	Direct Capital:				\$16,164,000
	Engineering, Procurement & Con	nstruction Managem	ent:		1,939,680
	Contractor Overhead/Profit:				2,424,600
	Total Capital:				\$20,500,000
		WATER T	REATMENT	Γ	
Capital Items		Quantity	Units		Cost
Unit Purchase		456	gpm		\$752,984
Water Treatment (Inclu	des Operator)	679,467,005	gal		\$271,787
Water Treatment QA	ues operator)	1,036	day		\$207,200
	B: 40 34				£1 221 071
	Direct Capital: Engineering, Procurement & Cor	nstruction Managem	ent:		\$1,231,971 147,837
	Engineering, Frocurement & Cor	istruction Managem	ent.		147,637
	Total Capital:				\$1,400,000
		CDF CONSTRU	JCTION - M	ENASHA	
Capital Items		Quantity	Units		Cost
Mobilization/Site Prep		27,778	sf		\$50,000
Shot Rock/Rip Rap		9,200	lf		\$7,360,000
Sheetpile Placement		276,000	sf		\$5,244,000
Clean Soil Cap		170,000	cy		\$1,700,000
Seeding		250,000	sy		\$250,000
Mitigation		52	acre		\$516,529
	Direct Capital:				\$15,120,529
	Engineering, Procurement & Cor	nstruction Managem	ent:		1,814,463
	Total Capital:				\$16,934,992
	f Longer Term Operating Costs		Years	Annual Cost	0150.462
Mitigation			40	10,000	\$150,463
Long-term Monitoring Long-term O&M			40 40	650,000 338,700	\$9,780,093 \$5,096,178
zong term otem	Total Present Worth, Longer Ter	m O&M Costs		330,700	\$15,026,734
	Total Project Capital and O&M				\$32,000,000
	Total Project Capital and Oce	1 Cost			322,000,000
		INSTITUTIO	ONAL CONT	TROLS	
Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Con	nstruction Managem	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth o	f Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
, and the second	Total Present Worth, Longer Ter	m O&M Costs			\$4,513,889
	Total Project Capital and O&M	M Cost			\$4,500,000
	TOTAL COST				\$58,400,000

ALTERNATIVE E: Dredge Sediment and Thermal Treatment

Total Capital:

Total Capital:

SEDIMENT REMOVAL (12-INCH CUTTERHEAD)

Capital Items	Quantity	Units		Cost
Site Preparation	1	Each		\$803,400
Mobilization - Equipment and Silt Curtain	1	LS		\$1,170,000
Debris Sweep	498	ac		\$7,968,000
Dredging - 2 12-hour shifts	135	Day	0.741758242	\$3,834,000
Dredge Monitoring (Water Quality)	135	Day		\$810,000
Sediment Removal QA	135	Day		\$324,000
Piping	95,000	ft		\$6,365,000
Road Crossings	4	Each		\$200,000
Booster Pumps	4	Each		\$1,350,000
Winter Over All Equipment	1	year		\$285,000
Site Restoration	1	Each		\$600,000
Direct Capital:				\$23,709,400
Engineering, Procurement & Co	nstruction Managem	ent:		2,845,128
Contractor Overhead/Profit:				3,556,410
Total Capital:				\$30,100,000

SEDIMENT DEWATERING (GRAVITY)

Capital Items	Quantity	Units	Cost
Land Lease or Purchase	5,010,182	sf	\$9,018,328
Mobilization	1	LS	\$20,000
Clear and Grub	5,010,182	sf	\$230,036
Berm Construction	92,850	cy	\$557,099
Rough Grading	5,010,182	sf	\$1,252,545
Liner Placement	5,010,182	sf	\$7,515,273
Demob/Disposal	1	LS	\$10,000
Regrade	92,850	cy	\$557,099
Seed/Sod	556,687	sy	\$556,687
Di	irect Capital:		\$19,717,067
Er	ngineering, Procurement & Construction Managem	ent:	2,366,048

		WATER TI	REATMENT	
Capital Items		Quantity	Units	Cost
Unit Purchase		2,991	gpm	\$2,561,265
Water Treatment (Inc	ludes Operator)	579,873,337	gal	\$231,949
Water Treatment QA		377	day	\$75,400
Piping		95,000	ft	\$6,365,000
	Direct Capital:			\$9,233,615
	Engineering, Procuremen	t & Construction Management	ent:	1,108,034
	Total Capital: SEDIMENT TREA	ATMENT (VITRIFICA	ATION 2x375 t Standalone Storage Units)	\$10,300,000
Capital Items		Quantity	Units	Cost
Sediment Treatment		1,038,544	ton	\$24,925,046
Soil Loading		1,038,544	ton	\$2,907,922
Soil Hauling		1,038,544	ton	\$1,217,043
	Direct Capital:			\$29,050,012
	Engineering, Procuremen	t & Construction Manageme	ent:	\$3,486,001
	zing.incoming, i rocuremen	. a construction manageme		ψ5,100,001

\$22,100,000

\$32,500,000

Capital Items	•	Quantity	Units		Cost
Deed Restrictions		1	LS		\$5,000
	D: 10 %1				#5.000
	Direct Capital:				\$5,000
	Engineering, Procurement & Construction	on Manageme	ent:		600
	Total Capital:				\$5,600
Present Worth	of Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring	(no action)		40	\$300,000	\$4,513,889
g	, ()			*****	
	Total Present Worth, Longer Term O&N	A Costs			\$4,513,889
	Total Frescht Worth, Longer Term Occiv	a Costs			\$4,515,669
	T. ID. I . C. II. I . 1041/C				24 500 000
	Total Project Capital and O&M Cost				\$4,500,000
	TOTAL COST				\$99,500,000

ALTERNATIVE F: Cap Sediment to Maximum Extent Possible, Dredge and Off-site Disposal

		C	APPING		
Capital Items		Quantity	Units		Cost
Mobilization/Site Prep		1	LS		\$200,000
Sand Purchase		701,551	tons		\$4,209,304
Sand Placement		501,108	cy		\$3,006,646
Cobble Purchase and P	lacement	300,665	cy		\$9,019,938
Cap Placement QA		1	LS		\$100,000
	Direct Capital:				\$16,535,888
	Engineering, Procurement & Const	ruction Managem	ent:		1,984,307
	Total Capital:				\$18,520,194
Present Worth of Monitoring/O&M	of Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring			40	\$400,000	\$6,018,519
Long-term O&M			40	\$370,404	\$5,573,207
	Total Present Worth, Longer Term	O&M Costs			\$11,591,726
	Total Project Capital and O&M	Cost			\$30,100,000
	SEDIMENT	REMOVAL	(10-INCH C	UTTERHEAD)	

Capital Items	Quantity	Units	Cost
Site Preparation	1	Each	\$100,000
Mobilization - Equipment and Silt Curtain	1	LS	\$170,000
Debris Sweep	498	ac	\$7,968,000
Dredging - 12 hour shifts	271	Day	\$1,544,700
Dredge Monitoring (Water Quality)	271	Day	\$813,000
Sediment Removal QA	271	Day	\$325,200
Site Restoration	1	Each	\$600,000
Direct Capital:			\$11,520,900
Engineering, Procurement	& Construction Managem	ent:	1,382,508
Contractor Overhead/Profit	:		1,728,135
Total Capital:			\$14,600,000

SEDIMENT DEWATERING (GRAVITY)

	SEDIN	ILIVI DE WIL	remino (or	,	
Capital Items		Quantity	Units		Cost
Land Lease or Purchase		636,049	sf		\$1,144,889
Mobilization		1	LS		\$20,000
Clear and Grub Berm Construction		636,049 33,083	sf cy		\$29,203 \$198,496
Rough Grading		636,049	sf		\$159,012
Liner Placement		636,049	sf		\$954,074
Demob/Disposal		1	LS		\$10,000
Regrade		33,083	cy		\$198,496
Seed/Sod		70,672	sy		\$70,672
	Direct Capital:				\$2,784,842
	Engineering, Procurement & Const	ruction Managem	ent:		334,181
	Total Capital:				\$3,100,000
	•				
		WATER TI	REATMENT		
Capital Items		Quantity	Units		Cost
Unit Purchase		389	gpm		\$684,675
Water Treatment (Inclu	des Operator)	211,864,949	gal		\$84,746
Water Treatment QA		379	Day		\$75,800
	Direct Capital:				\$845,221
	Engineering, Procurement & Const	ruction Managem	ent:		101,427
	Total Capital:				\$900,000
	-				3,200,000
SEDIMENT DISPOSAL (E	xisting NR 500 Commercial Disposal SED	Facility) IMENT DISP	OSAL (OFF	-SITE)	
Capital Items		Quantity	Units		Cost
Solidification		379,447	ton		\$9,486,175
Lime Purchase		37,945	ton		\$2,276,700
Soil Loading		379,447	ton		\$1,062,452
Soil Hauling		379,447	ton		\$1,778,658
Tipping Fees (non-TSC	A)	379,447	ton		\$16,316,221
	Direct Conital:				\$20,920,205
	Direct Capital:	mustion Monogom	amt:		\$30,920,205
	Engineering, Procurement & Const	ruction Managem	ent:		3,710,425
	Total Capital:				\$34,600,000
		INSTITUTIO	NAL CONT	CROLS	
		251110110	IL COM		
Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Const	ruation Managam	ont		\$5,000 600
		ruction Managem	ciit.		
D 4377 d	Total Capital:		V	10.4	\$5,600
Long-term Monitoring	f Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term	O&M Costs			\$4,513,889
	Total Project Capital and O&M	Cost			\$4,500,000
	TOTAL COST				\$87,800,000

BASIS FOR PRELIMINARY COST ESTIMATES

SEDIMENT REMEDIATION FOX RIVER, WISCONSIN

FOX RIVER, WISCONSIN LITTLE RAPIDS TO DE PERE

Action Level - 1,000 ppb

Material Handling Assumptions: Volume > 1000 ppb	586,788 cy 328 ac 447,930 m3	Acres corresponds to dredge
Volume > 125 ppb	1,483,156 cy 1,132,180 m3	footprint area
Volume > 250 ppb	1,171,585 cy 894,340 m3	rootprint area
Volume > 500 ppb	776,791 cy 592,970 m3	
Volume > 5000 ppb	186,348 cy 142,250 m3	
Volume > 50,000 ppb	0 cy 0 m3	
Solids Specific Gravity	2.47	
Fresh Water Density	62.4 lb/ft3	
In Situ Density	37.1% w/w 19.3% v/v 1.08 tons per cy	
Slurry Density (20% in situ)	9.0% w/w 3.9% v/v 0.89 tons per cy	Ogden Beeman
Dewatered Density (settling pond) Dewatered Density (CDF or landfill)	30% w/w 14.8% v/v 1.03 tons per cy 50% w/w 28.8% v/v 1.20 tons per cy	Montgomery Watson
Treated Density	50% w/w 28.8% v/v 1.20 tons per cy 93.7% w/w 60.0% v/v 1.33 tons per cy	Foth & VanDyke
HTTD Treatment Capacity	2,198,917 cy 1,650,000 tons	
Cap Volume	416,370 cy 317,840 m3	
Vitrification Treatment Capacity	8,028,121 cy in situ 6440000.00 tons	
Cost Estimating Parameters & Methodology:		
Interest Rate	6.0%	NY CYY I
Sales Tax	5.5% 12.0%	Not Used
Engineering, Procurement and Construction Mgmt Contractor Overhead and Profit - Dredging Only	15.0%	
Dredging	13.070	
Debris Sweep	\$16,000 per acre	Ogden Beeman
Dredge Monitoring (Water Quality)	\$3,000 per day	- Sava
Sediment Removal QA	\$1,200 per day	
Hydraulic - 10-inch Cutterhead		
Site Preparation	\$100,000 per dredge launch site	pj
Mobilization - Equipment	\$135,000 per dredge	Ogden Beeman
Mobilization - Silt Curtain	\$35,000	Ogden Beeman
Shift Rate (10 hours)	\$5,700 per shift	Ogden Beeman
Dredge Rate	1050 cy in situ per 10 hour shift	Ogden Beeman
Site Restoration Hydraulic - 2 12-inch Cutterheads	\$600,000 per dredge launch site	рј
Site Preparation	\$803,400 LS	Ogden Beeman
Mobilization - Equipment	\$1,135,000 LS	Ogden Beeman
Mobilization - Silt Curtain	\$35,000	Ogden Beeman
Shift Rate (12 hours)	\$14,200 per shift	Ogden Beeman
Dredge Rate	2885 cy in situ per 12 hour shift	Ogden Beeman
Winter Over Equipment	\$285,000 per year	Ogden Beeman
Site Restoration	\$600,000 per dredge launch site	
Length of Piping	95,000 ft 18 mi	Distance to Town of Holland (map
		provded by Fred Swed) 11 mi of
		hard piping plus 7 mi of floating
Piping Purchase/Installation	\$67 per ft	pipe Ogden Beeman
Number of Road Crossings	4 each	pj, review map
Cost per Road Crossing	\$50,000 per crossing	pj, review map
Number of Booster Pumps	4 each	Ogden Beeman
Booster Pump Cost	\$2,500 per day	Ogden Beeman
High Temperature Thermal Desorption		
Setup Staging Area	\$50,000	pj
Mobilization/Site Prep	\$150,000	Maxymillian
Sediment Treatment QA	\$2 per ton	
Ratio of Amending Sand Volume to Dredge Vol.	0.25 :1	01
Sand Purchase and Deliver Blending	\$6 per ton \$25 per ton	Ole Ole
HTTD (includes off-gas treatment)	\$75 per ton	Maxymillian
Stack Testing	\$50,000 LS	Maxymillian
Place Treated Material	\$3 per ton	
Vitrification	· · ·	
Capital Costs	\$36,000,000 LS	Unit Cost Study- Minergy
Operating Costs	\$6,800,000 per year	Unit Cost Study- Minergy
Vitrification (Unit Cost includes Cap and Oper Costs)	\$24.0 per ton	Unit Cost Study- Minergy
Capping Makiliantian/Sita Para	6200,000	O-day Berney
Mobilization/Site Prep Area	\$200,000 5,945,840 sf 552,400 m2	Ogden Beeman
Sand Cap Depth	1.7 feet	
Placement Rate	\$6 per cy	Ogden Beeman
Sand Purchase	\$6 per ton	Ole
Sand Density	1.4 tons per cy	
Armored Cap Depth	1.0 feet	Maona
Cobbles Cap Placement QA	\$30 per cy \$100,000 LS	Means Ogden Beeman
Long-term O&M	2% of capital	pj
Long-term Monitoring	\$400,000 per year	Anne LTM
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Nearshore CDF	Arrowhead		Menasha		
Land Lease or Purchase	\$1.8	per sf	\$1.8		Ole
Length	8,000	lf	9,200		Baird
Capping Volume	190,000	cy	170,000		Baird
Seeding Area	280,000	sy	250,000		Baird
Sheetpile Wall Length	8,000	lf	9,200		Baird
Sheetpile Depth	30	ft	30		based on bathymetry
Sheetpile Cost	\$19	per sf	\$19		pj
Shot Rock Berm	\$650	per lf	\$550		Baird
Rip Rap	\$215	per lf	\$250		Baird
Place Treated Material	\$2	per cy	\$2		pj
Clean Soil Cap	\$10	per cy	\$10		Baird
Seeding		per sy	\$1		Baird
Mitigation	\$10,000	per acre			Tim
č	\$10,000				Tim
Long-term Monitoring	\$650,000				Anne LTM
Long-term O&M		of capital			pj
Solidification					13
Percent Lime	10.0%	(w/w)			Montgomery Watson
Lime		per ton	Mixing	\$25 per ton	pj, pug mill mixing
			0	F	1371 "8
Dewatering - Upland Pond (2 cells)					
Land Lease or Purchase	\$1.80	per sf			Ole
Area (1050 cy dredge rate)	636,049				2 days slurry + 13 wk solids * 2 cell
Perimeter (1050 cy dredge rate)	3,190				assume square
Area (2885 cy dredge rate)	5,010,182				2 days slurry + 13 wk solids * 2
Area (2005 cy dredge rate)	3,010,102	31			cells * 2 shifts per day
Perimeter (2885 cy dredge rate)	8,953	1f			
Depth of Material in Dewatering Cell		feet			assume square based on size at Arrowhead Park
Cell Penth		hours			Not Used
Cell Depth Mobilization		feet			:
Mobilization	\$20,000				pj
Clear and Grub		per acre			pj
Berm Volume		cy per lf			2:1 slope, 8-foot top
Berm Construction		per cy			рj
Rough Grading	\$0.25				pj
Asphalt Liner	\$1.50				pj, 2 2-inch lifts
Demob/Disposal	\$10,000				pj
Regrade Berm Soils		per cy			pj
Seed/Sod	\$1	per sy			Baird
Dewatering - Mechanical					
Mobilization	\$100,000				рj
Holding Pond-Centrifuge	\$80	per bone dry ton			Global Dewatering
Water Treatment					
Flow Rate (1 10-inch Dredge; settling pond)		gpm			assume operate 24/7
	389 \$684,675				assume operate 24/7 pj
Flow Rate (1 10-inch Dredge; settling pond)	\$684,675				
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond)	\$684,675	LS gpm			pj assume operate 24/7 pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF)	\$684,675 456	LS gpm LS			pj assume operate 24/7
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges)	\$684,675 456 \$752,984	LS gpm LS gpm			pj assume operate 24/7 pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges)	\$684,675 456 \$752,984 3,505	LS gpm LS gpm LS			pj assume operate 24/7 pj assume operate 24/7
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges)	\$684,675 456 \$752,984 3,505 \$2,561,265	LS gpm LS gpm LS gpm LS gpm			pj assume operate 24/7 pj assume operate 24/7 pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond)	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991	LS gpm LS gpm LS gpm LS gpm gpm			pj assume operate 24/7 pj assume operate 24/7 pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering)	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892	LS gpm LS gpm LS gpm LS gpm gpm			pj assume operate 24/7 pj assume operate 24/7 pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering)	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40	LS gpm LS gpm LS gpm LS gpm gpm LS			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator)	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40	LS gpm LS gpm LS gpm gpm LS per 1,000 gallons per day			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40	LS gpm LS gpm LS gpm gpm LS per 1,000 gallons per day			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40	LS gpm LS gpm LS gpm gpm LS per 1,000 gallons per day			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; CDF) How Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial)	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000	LS gpm LS gpm LS gpm gpm per 1,000 gallons per day feet			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000	LS gpm LS gpm LS gpm gpm LS ls gpm gpm LS gpm gpm the sper 1,000 gallons per day feet			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; CDF) How Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial)	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,400 20,000	LS gpm LS gpm LS gpm gpm per 1,000 gallons per day feet			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000	LS gpm LS gpm LS gpm gpm LS ls gpm gpm LS gpm gpm the sper 1,000 gallons per day feet			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000 \$2,000 \$2,80 \$	LS gpm LS gpm LS gpm gpm LS gpm gpm est spm gpm LS per 1,000 gallons per day feet			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility)	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000 \$2.80 2 0.5 \$43	LS gpm LS gpm LS gpm gpm LS gpm gpm tLS per 1,000 gallons per day feet per ton hours hours			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA)	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2.80 2 0.5 \$43 \$55	LS gpm LS gpm LS gpm gpm LS per 1,000 gallons per day feet			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment (QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA)	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2.80 2 0.5 \$43 \$55 \$75	LS gpm LS gpm LS gpm gpm LS per 1,000 gallons per day feet			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2.80 2 0.5 \$43 \$55 \$75	LS gpm LS gpm LS gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per ton per ton per ton per ton tons			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj St. Paul St. Paul pj pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; cDF) Unit, Purchase (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2.80 2 0,5 \$43 \$555 \$775	LS gpm LS gpm LS gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per ton per ton per ton per ton tons			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2.80 2 0,5 \$43 \$555 \$775	LS gpm LS gpm LS gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per ton per ton per ton per ton tons			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj St. Paul St. Paul pj pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,400 20,000 \$2,200 20,000 \$2,280 2 0.5 \$433 \$555 \$75 32 1,000,000 \$2,220,280	LS gpm LS gpm LS gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per ton per ton per ton per ton tons			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj St. Paul St. Paul pj pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2,280 43 \$555 \$75 32 1,000,000 \$2,220,280 140	LS gpm LS gpm LS gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per hour tons LS LS acres			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj St. Paul St. Paul pj pj
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Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2,200 \$2,000 \$2,20,000 \$2,220,280 140 \$55 \$1100,000 \$5100,000	LS gpm LS gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per hour tons LS			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj St. Paul St. Paul pj pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2,80 2 0,5 \$43 \$55 \$75 32 1,000,000 \$2,220,280 140 \$5 \$100,000	LS gpm LS gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per hour tons LS			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj St. Paul St. Paul pj pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost Post-closure Monitoring Institutional Controls	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2,200 \$2,000 \$2,20,000 \$2,220,280 140 \$55 \$1100,000 \$5100,000	LS gpm LS gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per hour tons LS			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj pj pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost Post-closure Monitoring	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,400 20,000 \$2,200 20,000 \$2,280 43 \$555 \$75 32 1,000,000 \$2,220,280 140 \$5 \$100,000 \$500,000 \$330,000	LS gpm LS gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per hour tons LS			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj pj pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges) Flow Rate (2-12-in Dredges) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost Post-closure Monitoring Institutional Controls Public Education Program	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2,80 2 0,5 \$43 \$555 \$75 32 1,000,000 \$2,220,280 140 \$5 \$100,000 \$500,000 \$30,000	LS gpm LS gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per hour tons LS			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj pj pj pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges) Flow Rate (2-12-in Dredges) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost Post-closure Monitoring Institutional Controls Public Education Program O&M Plans	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2,200 \$2,000 \$2,220,280 140 \$5 \$100,000 \$500,000 \$100,000 \$100,000	LS gpm LS gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per hour tons LS			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj pj pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost Post-closure Monitoring Institutional Controls Public Education Program O&M Plans Deed Restrictions Annual Costs	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2,200 \$2,000 \$2,220,280 140 \$5 \$100,000 \$500,000 \$100,000 \$100,000	LS gpm LS gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per hour tons LS			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj pj pj pj pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges) Flow Rate (2-12-in Dredges) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Area Local Siting Fee Closure Cap Operating Cost Post-closure Monitoring Institutional Controls Public Education Program O&M Plans Deed Restrictions Annual Costs Public Education Program	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000 \$2,80 2 0,5 \$43 \$555 \$75 32 1,000,000 \$2,220,280 140 \$5 \$100,000 \$500,000 \$30,000 \$5,000 \$30,000	LS gpm LS gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per hour tons LS			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj St. Paul St. Paul pj pj pj pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges) Flow Rate (2-12-in Dredges) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost Post-closure Monitoring Institutional Controls Public Education Program O&M Plans Deed Restrictions Annual Costs Public Education Program Maintaining O&M Plans	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2,80 2 0,5 \$43 \$55 \$75 32 1,000,000 \$2,220,280 140 \$5 \$100,000 \$500,000 \$30,000 \$100,000 \$20,000 \$30,000 \$30,000 \$30,000 \$30,000 \$30,000 \$30,000	LS gpm LS gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per hour tons LS			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj pj pj pj pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost Post-closure Monitoring Institutional Controls Public Education Program O&M Plans Deed Restrictions Annual Costs Public Education Program Maintaining O&M Plans Reporting	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000 \$2,80 2 0,5 \$43 \$555 \$75 32 1,000,000 \$2,220,280 140 \$5 \$100,000 \$500,000 \$30,000 \$5,000 \$30,000	LS gpm LS gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per hour tons LS			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj St. Paul St. Paul pj pj pj pj
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges) Flow Rate (2-12-in Dredges) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost Post-closure Monitoring Institutional Controls Public Education Program O&M Plans Deed Restrictions Annual Costs Public Education Program Maintaining O&M Plans	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2,200 \$2,000 \$2,20,280 140 \$55 \$1,000,000 \$2,220,280 \$140 \$55 \$100,000 \$500,000 \$30,000 \$500,000 \$5,000 \$500,000 \$5,000 \$500,000	LS gpm LS gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per hour tons LS			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj

Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Construct	tion Manageme	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth of Long-term Monitoring (f Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term O&	M Costs			\$4,513,889
	Total Project Capital and O&M Cos	t			\$4,500,000

ALTERNATIVE B: Monitored Natural Recovery

MONITORING/INSTITUTIONAL CONTROLS

Capital Items Public Education Program	Quantity	Units LS		Cost \$100,000
O&M Plans	1	LS		\$20,000
Deed Restrictions	1	LS		\$5,000
Deed Restrictions	1	LS		\$3,000
Direct Capital:				\$125,000
Engineering, Procureme	nt & Construction Managem	ent:		15,000
				·
Total Capital:				\$140,000
Present Worth of Longer Term Operatin	g Costs	Years	Annual Cost	
Long-term Monitoring		40	\$600,000	\$9,027,778
Public Education Program		40	\$30,000	\$451,389
Maintaining O&M Plans		40	\$800	\$12,037
Reporting		40	\$20,000	\$300,926
Total Present Worth, Lo	nger Term O&M Costs			\$9,792,130
Total Project Capital a	nd O&M Cost			\$9,900,000

ALTERNATIVE C1: Dredge Sediment With Disposal at Existing NR 500 Commercial Disposal Facility (Passive Dewatering)

SEDIMENT REMOVAL (10-INCH CUTTERHEAD)

Constant Manua	0	TT24-		Cont
Capital Items	Quantity	Units		Cost
Site Preparation	1	Each		\$100,000
Mobilization - Equipment and Silt Curtain	1	LS		\$170,000
Debris Sweep	328	ac		\$5,248,000
Dredging - 12 hour shifts	559	Day	4.3	\$3,186,300
Dredge Monitoring (Water Quality)	559	Day		\$1,677,000
Sediment Removal QA	559	Day		\$670,800
Site Restoration	1	Each		\$600,000
Direct Capital:				\$11,652,100
Engineering, Procurement & Co	nstruction Managem	ent:		1,398,252
Contractor Overhead/Profit:				1,747,815
Total Capital:				\$14,800,000

SEDIMENT DEWATERING (GRAVITY)

Capital Items	Quantity	Units	Cost
Land Lease or Purchase	636,049	sf	\$1,144,889
Mobilization	1	LS	\$20,000
Clear and Grub	636,049	sf	\$29,203
Berm Construction	33,083	cy	\$198,496
Rough Grading	636,049	sf	\$159,012
Liner Placement	636,049	sf	\$954,074
Demob/Disposal	1	LS	\$10,000
Regrade	33,083	cy	\$198,496
Seed/Sod	70,672	sy	\$70,672
Dir	ect Capital:		\$2,784,842
Eng	gineering, Procurement & Construction Managem	ent:	334,181
Tot	tal Capital:		\$3,100,000

Capital Items	Quantity	Units	Cost
Unit Purchase	389	gpm	\$684,675
Water Treatment (Includes Operator)	438,036,771	gal	\$175,215
Water Treatment QA	783	day	\$156,600
Direct Capital:			\$1,016,490
Engineering, Procurement & Construction Management:			121,979
Direct Capital: Engineering, Procurement & Construction Management:			

SEDIMENT DISPOSAL (Existing NR 500 Commercial Disposal Facility)

Total Capital:

Capital Items	Quantity	Units	Cost
Solidification	784,517	ton	\$19,612,925
Lime Purchase	78,452	ton	\$4,707,120
Soil Loading	784,517	ton	\$2,196,648
Soil Hauling	784,517	ton	\$3,677,423
Tipping Fees (non-TSCA)	784,517	ton	\$33,734,231

 Direct Capital:
 \$63,928,347

 Engineering, Procurement & Construction Management:
 7,671,402

\$1,100,000

Total Capital: \$71,600,000

INSTITUTIONAL CONTROLS

Capital Items	Quantity	Units	Cost
Deed Restrictions	1	LS	\$5,000
	Direct Capital: Engineering, Procurement & Construction Management	\$5,000 600	
	Total Capital:		\$5,600

Present Worth of Longer Term Operating CostsYearsAnnual CostLong-term Monitoring (no action)40\$300,000\$4,513,889

Total Present Worth, Longer Term O&M Costs \$4,513,889

Total Project Capital and O&M Cost \$4,500,000

TOTAL COST \$95,100,000

ALTERNATIVE C2A: Dredge Sediment with Combined Dewatering and Disposal Facility

SEDIMENT REMOVAL (12-INCH CUTTERHEAD)

Capital Items	Quantity	Units		Cost
Site Preparation	1	Each		\$803,400
Mobilization - Equipment and Silt Curtain	1	LS		\$1,170,000
Debris Sweep	328	ac		\$5,248,000
Dredging - 2 12-hour shifts	102	Day	0.56043956	\$2,896,800
Dredge Monitoring (Water Quality)	102	Day		\$612,000
Sediment Removal QA	102	Day		\$244,800
Piping	95,000	ft		\$6,365,000
Road Crossings	4	Each		\$200,000
Booster Pumps	4	Each		\$1,020,000
Winter Over All Equipment	1	year		\$285,000
Site Restoration	1	Each		\$600,000
Direct Capital:				\$19,445,000

 Direct Capital:
 \$19,445,000

 Engineering, Procurement & Construction Management:
 2,333,400

 Contractor Overhead/Profit:
 2,916,750

Total Capital: \$24,700,000

WATER TREATMENT

Capital Items		Quantity	Units		Cost
Unit Purchase		3,505	gpm		\$2,561,265
Water Treatment (Inclu	des Operator)	513,269,905	gal		\$205,308
Water Treatment QA		102	day ft		\$40,800
Piping		20,000	11		\$1,340,000
	D: +C '+1				CA 147 272
	Direct Capital:				\$4,147,373
	Engineering, Procurement & Cons	struction Manageme	ent:		497,685
	T (10 %)				#4.600.000
	Total Capital:				\$4,600,000
	SEDIMEN'	Γ DISPOSAL (Dedicated N	R 500 Monofill)	
Capital Items		Quantity	Units		Cost
Landfill Construction		1	LS		\$2,220,280
Local Siting Fee		392,498	cy		\$1,962,490
Closure		12	acres		\$1,216,419
	Direct Capital:				\$5,399,189
	Engineering, Procurement & Cons	struction Manageme	ent:		647,903
	Total Capital:				\$6,000,000
	f Longer Term Operating Costs		Years	Annual Cost	
Operations			10	\$500,000	\$3,680,044
Post Closure Monitorin	g		40	\$30,000	\$451,389
	Total Present Worth, Longer Tern	O&M Costs			\$4,131,432
	,				, , , , ,
	Total Project Capital and O&M	Cost			\$10,100,000
		INSTITUTIO	NAL CON	TROLS	
Capital Items		Quantity	Units		Cost
Deed Restrictions		1	LS		\$5,000
	Direct Conital:				\$5,000
	Direct Capital: Engineering, Procurement & Cons	struction Managem	ent:		\$5,000 600
	Total Capital:				\$5,600
D	61 T O		V	A1 Gt	
Long-term Monitoring	f Longer Term Operating Costs		Years 40	Annual Cost \$300,000	\$4,513,889
Long term womtoring	(no action)		-10	\$300,000	ψ1,515,007
	Total Present Worth, Longer Tern	n O&M Costs			\$4,513,889
	T. I. T. C. C. I. I. C. C. I.				24.700.000
	Total Project Capital and O&M	Cost			\$4,500,000
	TOTAL COST				\$43,900,000
ALTERNATIVE C2B	: Dredge Sediment with Sep	arate Dewateri	ng and Disp	osal Facility	
	SEDIMEN	T REMOVAL	(12-INCH C	UTTERHEAD)	
Capital Items		Quantity	Units		Cost
Site Preparation Mobilization - Equipme	ant and Silt Curtain	1	Each LS		\$803,400 \$1,170,000
Debris Sweep	and Sht Curtain	328	ac		\$5,248,000
Dredging - 2 12-hour sh	nifts	102	Day	0.56043956	\$2,896,800
Dredge Monitoring (Wa		102	Day		\$612,000
Sediment Removal QA		102	Day		\$244,800
Piping		95,000	ft		\$6,365,000
Road Crossings		4	Each		\$200,000
Booster Pumps		4	Each		\$1,020,000
Winter Over All Equip	ment	1	year		\$285,000
Site Restoration		1	Each		\$600,000
	Direct Capital:				\$19,445,000
	Engineering, Procurement & Cons	struction Manageme	ent:		2,333,400
	Contractor Overhead/Profit:	Z .			2,916,750
	T (10 %)				ma . =
	Total Capital:				\$24,700,000

SEDIMENT DEWATERING (GRAVITY - NR 213)

Capital Items Land Lease or Purchase Mobilization Clear and Grub Berm Construction Rough Grading Liner Placement Demob/Disposal Regrade Seed/Sod	Direct Capital: Engineering, Procurement & Constr	Quantity 5,010,182 1 5,010,182 92,850 5,010,182 5,010,182 1 1 92,850 556,687	Units sf LS sf cy sf sf sf sf sy sy sy		\$9,018,328 \$20,000 \$230,036 \$557,099 \$1,252,545 \$7,515,273 \$10,000 \$557,099 \$556,687
	Total Capital:				\$22,100,000
		WATER T	REATMENT	Γ	
Capital Items Unit Purchase Water Treatment (Inclu Water Treatment QA Piping	des Operator) Direct Capital: Engineering, Procurement & Constr	Quantity 2,991 438,036,771 285 20,000	Units gpm gal day ft		Cost \$2,561,265 \$175,215 \$57,000 \$1,340,000 \$4,133,480 496,018
	Engineering, Freedreiheit & Const.	uction managem			
	Total Capital:				\$4,600,000
	SEDIMENT	DISPOSAL (Dedicated N	R 500 Monofill)	
Capital Items Solidification		Quantity 784,517	Units ton		Cost \$19,612,925
Lime Purchase		78,452	ton		\$4,707,120
Sediment Loading		784,517	ton		\$2,196,647
Sediment Hauling		784,517	ton		\$3,677,422
Landfill Construction		1	LS		\$2,220,280
Local Siting Fee Closure		392,498 12	cy		\$1,962,490
Ciosure		12	acres		\$1,216,419
	Direct Capital: Engineering, Procurement & Consti	ruction Manageme	ent:		\$35,593,303 4,271,196
	Total Capital:				\$39,900,000
Present Worth o	f Longer Term Operating Costs		Years	Annual Cost	
Operations Post Closure Monitorin			10 40	\$500,000 \$30,000	\$3,680,044 \$451,389
	Total Present Worth, Longer Term	O&M Costs			\$4,131,432
	Total Project Capital and O&M (Cost			\$44,000,000
		INSTITUTIO	ONAL CON	ΓROLS	
G ****					~
Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Constr	ruction Manageme	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth o Long-term Monitoring	f Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term	O&M Costs			\$4,513,889
	Total Project Capital and O&M (\$4,500,000
	TOTAL COST				\$99,900,000

ALTERNATIVE C3: Dredge with Disposal at Existing NR 500 Commercial Disposal Facility (Mechanical Dewatering)

SEDIMENT REMOVAL (10-INCH CUTTERHEAD)

Capital Items		Quantity	Units		Cost
Site Preparation		1	Each		\$100,000
Mobilization - Equipme	nt and Silt Curtain	1	LS		\$170,000
Debris Sweep		328	ac		\$5,248,000
Dredging - 12 hour shift	S	559	Day	4.3	\$3,186,300
Dredge Monitoring (Wa	ter Quality)	559	Day		\$1,677,000
Sediment Removal QA		559	Day		\$670,800
Site Restoration		1	Each		\$600,000
	Direct Capital:				\$11,652,100
	Engineering, Procurement & Constr	uction Manageme	ent:		1,398,252
	Contractor Overhead/Profit:				1,747,815
	Total Capital:				\$14,800,000
	SEDIME	NT DEWATE	RING (MEC	CHANICAL)	
Capital Items		Quantity	Units	,	Cost
Mobilization/Site Prep		Quality 1	LS		\$100,000
Dewatering		235,355	bdt		\$18,828,399
Dematering		230,300	out		\$10,020,377
	Direct Capital:				\$18,928,399
	Engineering, Procurement & Constr	nation Managam	unt:		2,271,408
	Engineering, Frocurement & Consu	uction ivianageme	iit.		2,2/1,408
	Total Capital:				\$21,200,000
		WATER TI	REATMENT	Γ	
Constant Manage		0	¥1		Cont
Capital Items Unit Purchase		Quantity 456	Units		Cost \$1,380,892
Water Treatment (Include	es Operator)	513,269,905	gpm gal		\$205,308
Water Treatment QA	es Operator)	783	day		\$156,600
water freatment Qir		703	uuy		\$150,000
	Direct Capital:				\$1,742,800
	Engineering, Procurement & Constr	uction Manageme	ent:		209,136
	Total Capital:				\$2,000,000
	SEDIMENT DISPOSA	AL (Existing N	IR 500 Comi	mercial Disposal Facility)	
				norem 2 is posm 1 nemy)	
Capital Items		Quantity	Units		Cost
Soil Loading		470,710	ton		\$1,317,988
Soil Hauling		470,710	ton		\$2,206,453
Tipping Fees (non-TSC	A)	470,710	ton		\$20,240,529
Tipping Fees (TSCA)	<i>'</i>	0	ton		\$0
ripping rees (riserr)		Ŭ	1011		40
	Direct Capital:				\$23,764,970
		nation Managam	unt:		
	Engineering, Procurement & Constr	uction Manageme	siit.		2,851,796
	Total Capital:				\$26,600,000
				OT 0	
	In	STITUTION	AL CONTR	OLS	
Capital Items Deed Restrictions	I	NSTITUTION Quantity 1	AL CONTR Units LS	OLS	Cost \$5,000
		Quantity	Units	OLS	\$5,000
	Direct Capital: Engineering, Procurement & Constr	Quantity 1	Units LS	OLS	\$5,000 \$5,000
	Direct Capital:	Quantity 1	Units LS	OLS	\$5,000 \$5,000
Deed Restrictions	Direct Capital: Engineering, Procurement & Constr Total Capital:	Quantity 1	Units LS	OLS Annual Cost	\$5,000 \$5,000 600
Deed Restrictions	Direct Capital: Engineering, Procurement & Constr Total Capital: Longer Term Operating Costs	Quantity 1	Units LS ent:		\$5,000 \$5,000 600 \$5,600
Deed Restrictions Present Worth of	Direct Capital: Engineering, Procurement & Constr Total Capital: Longer Term Operating Costs no action)	Quantity 1 uction Manageme	Units LS ent:	Annual Cost	\$5,000 \$5,000 600 \$5,600 \$4,513,889
Deed Restrictions Present Worth of	Direct Capital: Engineering, Procurement & Constr Total Capital: Longer Term Operating Costs no action) Total Present Worth, Longer Term O	Quantity 1 uction Management	Units LS ent:	Annual Cost	\$5,000 \$5,000 600 \$5,600 \$4,513,889
Deed Restrictions Present Worth of	Direct Capital: Engineering, Procurement & Constr Total Capital: Longer Term Operating Costs no action)	Quantity 1 uction Management	Units LS ent:	Annual Cost	\$5,000 \$5,000 600 \$5,600 \$4,513,889

SEDIMENT REMOVAL (10-INCH CUTTERHEAD)

Capital Items		Quantity	Units		Cost
Site Preparation	107.0	1	Each		\$100,000
Mobilization - Equipme	ent and Silt Curtain	1	LS		\$170,000
Debris Sweep		328	ac	4.2	\$5,248,000
Dredging - 12 hour shift		559	Day	4.3	\$3,186,300
Dredge Monitoring (Wa	iter Quality)	559	Day		\$1,677,000
Sediment Removal QA		559	Day		\$670,800
Site Restoration		1	Each		\$600,000
	Direct Capital:				\$11,652,100
	Engineering, Procurement & Const Contractor Overhead/Profit:	ruction Managem	ent:		1,398,252 1,747,815
	Total Capital:				\$14,800,000
		WATER T	REATMEN	Γ	
Constant Manua		0	¥1		Cost
Capital Items Unit Purchase		Quantity 456	Units gpm		\$752,984
Water Treatment (Inclu-	das Operator)	513,269,905			\$205,308
Water Treatment QA	des Operator)	783	gal day		\$156,600

	Direct Capital:				\$1,114,892
	Engineering, Procurement & Const	ruction Managem	ent:		133,787
	Total Capital:				\$1,200,000
	C	DF CONSTRI	JCTION - M	IENASHA	
Capital Items		Quantity	Units		Cost
Mobilization/Site Prep		27,778	sf		\$50,000
Shot Rock/Rip Rap		9,200	lf		\$7,360,000
Sheetpile Placement		276,000	sf		\$5,244,000
Clean Soil Cap		170,000	cy		\$1,700,000
Seeding		250,000	sy		\$250,000
Mitigation		52	acre		\$516,529
	Direct Capital: Engineering, Procurement & Const	ruction Managem	ent [.]		\$15,120,529 1,814,463
	Total Capital:				\$16,934,992
	f Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	10,000	\$150,463
Long-term Monitoring			40	650,000	\$9,780,093
Long-term O&M			40	338,700	\$5,096,178
	Total Present Worth, Longer Term	O&M Costs			\$15,026,734
	Total Project Capital and O&M	Cost			\$32,000,000
		INSTITUTIO	ONAL CON	TROLS	
Capital Items		Quantity	Units		Cost
Deed Restrictions		Quality 1	LS		\$5,000
	Direct Capital:				\$5,000
	Engineering, Procurement & Const	ruction Managem	ent:		600
	Total Capital:				\$5,600
Present Worth o Long-term Monitoring (f Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term	O&M Costs			\$4,513,889
	Total Project Capital and O&M	Cost			\$4,500,000
	TOTAL COST				\$52,500,000

ALTERNATIVE E: Dredge Sediment and Thermal Treatment

SEDIMENT REMOVAL (12-INCH CUTTERHEAD)

Capital Items	Quantity	Units		Cost
Site Preparation	1	Each		\$803,400
Mobilization - Equipment and Silt Curtain	1	LS		\$1,170,000
Debris Sweep	328	ac		\$5,248,000
Dredging - 2 12-hour shifts	102	Day	0.56043956	\$2,896,800
Dredge Monitoring (Water Quality)	102	Day		\$612,000
Sediment Removal QA	102	Day		\$244,800
Piping	95,000	ft		\$6,365,000
Road Crossings	4	Each		\$200,000
Booster Pumps	4	Each		\$1,020,000
Winter Over All Equipment	1	year		\$285,000
Site Restoration	1	Each		\$600,000
Direct Capital:				\$19,445,000
Engineering, Procurement & C	onstruction Managem	ent:		2,333,400
Contractor Overhead/Profit:	Č			2,916,750
Total Capital:				\$24,700,000

SEDIMENT DEWATERING (GRAVITY)

Capital Items	Quantity	Units	Cost
Land Lease or Purchase	5,010,182	sf	\$9,018,328
Mobilization	1	LS	\$20,000
Clear and Grub	5,010,182	sf	\$230,036
Berm Construction	92,850	cy	\$557,099
Rough Grading	5,010,182	sf	\$1,252,545
Liner Placement	5,010,182	sf	\$7,515,273
Demob/Disposal	1	LS	\$10,000
Regrade	92,850	cy	\$557,099
Seed/Sod	556,687	sy	\$556,687
Direct Capital:			\$19,717,067

Engineering, Procurement & Construction Management: 2,366,048

Total Capital: \$22,100,000

WATER TREATMENT

Capital Items	Quantity	Units	Cost
Unit Purchase	2,991	gpm	\$2,561,265
Water Treatment (Includes Operator)	438,036,771	gal	\$175,215
Water Treatment QA	285	day	\$57,000
Piping	95,000	ft	\$6,365,000

 Direct Capital:
 \$9,158,480

 Engineering, Procurement & Construction Management:
 1,099,018

Total Capital: \$10,300,000

SEDIMENT TREATMENT (VITRIFICATION 2x375 t Standalone Storage Units)

Capital Items		Quantity	Units	Cost
Sediment Treatment		784,517	ton	\$18,828,399
Soil Loading		784,517	ton	\$2,196,647
Soil Hauling		784,517	ton	\$919,355
-	Direct Capital:			\$21,944,401
Engineering, Procurement & Construction Management:			\$2,633,328	

Total Capital: \$24,600,000

INSTITUTIONAL CONTROLS

Capital Items		Quantity	Units		Cost
Deed Restrictions		1	LS		\$5,000
	Direct Capital:				\$5,000
	Engineering, Procurement & Construct	ion Manageme	ent:		600
	Total Capital:				\$5,600
	•				
Present Worth of Longer Term Operating Costs Years Annual Cost					
Long-term Monitoring (r	no action)		40	\$300,000	\$4,513,889
5	,				
	Total Present Worth, Longer Term O&	M Costs			\$4,513,889
					4 ,,, 2 2 ,
	Total Project Capital and O&M Cos	•			\$4,500,000
	Total Project Capital and Octor Cos				\$4,500,000
	TOTAL COST				#9/ 200 000
	TOTAL COST				\$86,200,000

ALTERNATIVE F: Cap Sediment to Maximum Extent Possible, Dredge and Off-site Disposal

CAPPING

		C.	APPING		
Capital Items		Quantity	Units		Cost
Mobilization/Site Prep		1	LS		\$200,000
Sand Purchase		513,838	tons		\$3,083,028
Sand Placement		367,027	cy		\$2,202,163
Cobble Purchase and P	lacement	220,216	cy		\$6,606,488
Cap Placement QA		1	LS		\$100,000
	Direct Capital:				\$12,191,679
	Engineering, Procurement & Cor	struction Managem	ent:		1,463,001
	Total Capital:				\$13,654,680
Present Worth of Monitoring/O&M	of Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring			40	\$400,000	\$6,018,519
Long-term O&M			40	\$273,094	\$4,109,048
	Total Present Worth, Longer Terr	m O&M Costs			\$10,127,566
	Total Project Capital and O&M	1 Cost			\$23,800,000
	SEDIMEN	T REMOVAL	(10-INCH C	UTTERHEAD)	

Capital Items	Quantity	Units	Cost
Site Preparation	1	Each	\$100,000
Mobilization - Equipment and Silt Curtain	1	LS	\$170,000
Debris Sweep	328	ac	\$5,248,000
Dredging - 12 hour shifts	163	Day	\$929,100
Dredge Monitoring (Water Quality)	163	Day	\$489,000
Sediment Removal QA	163	Day	\$195,600
Site Restoration	1	Each	\$600,000
Direct Capital:			\$7,731,700
Engineering, Procurement & C	onstruction Managem	ent:	927,804
Contractor Overhead/Profit:			1,159,755
Total Capital:			\$9,800,000

SEDIMENT DEWATERING (GRAVITY)

Capital Items Land Lease or Purchas Mobilization	se	Quantity 636,049	Units sf LS		Cost \$1,144,889 \$20,000
Clear and Grub		636,049	sf		\$29,203
Berm Construction		33,083	cy		\$198,496
Rough Grading		636,049	sf		\$159,012
Liner Placement		636,049 1	sf LS		\$954,074
Demob/Disposal Regrade		33,083	cy		\$10,000 \$198,496
Seed/Sod		70,672	sy		\$70,672
	Direct Capital:	.: N			\$2,784,842
	Engineering, Procurement & Const	ruction Managem	ent:		334,181
	Total Capital:				\$3,100,000
		WATER T	REATMENT	Γ	
Capital Items		Quantity	Units		Cost
Unit Purchase		389	gpm		\$684,675
Water Treatment (Incl	udes Operator)	127,216,760	gal		\$50,887
Water Treatment QA		228	Day		\$45,600
	Direct Capital:				\$781,162
	Engineering, Procurement & Const	ruction Managem	ent:		93,739
	Total Capital:				\$900,000
SEDIMENT DISPOSAL (E	Existing NR 500 Commercial Disposal	Engility)			
SEDIMENT DISTOSAL (I		DIMENT DISE	POSAL (OFF	F-SITE)	
Capital Items		Quantity	Units		Cost
Solidification		227,844	ton		\$5,696,100
Lime Purchase		22,785	ton		\$1,367,100
Soil Loading		227,844	ton		\$637,963
Soil Hauling	a.)	227,844	ton		\$1,068,019
Tipping Fees (non-TSC	CA)	227,844	ton		\$9,797,292
	Direct Capital:				\$18,566,474
	Engineering, Procurement & Const	ruction Managem	ent:		2,227,977
	Total Capital:				\$20,800,000
		INSTITUTIO	ONAL CONT	ΓROLS	
Capital Items		Quantity	Units		Cost
Deed Restrictions		Quality 1	LS		\$5,000
	Direct Capital: Engineering, Procurement & Const	ruction Managem	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth	of Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring			40	\$300,000	\$4,513,889
	Total Present Worth, Longer Term	O&M Costs			\$4,513,889
	Total Project Capital and O&M	Cost			\$4,500,000
	TOTAL COST				\$62,900,000

BASIS FOR PRELIMINARY COST ESTIMATES

SEDIMENT REMEDIATION FOX RIVER, WISCONSIN

FOX RIVER, WISCONSIN LITTLE RAPIDS TO DE PERE

Action Level - 5,000 ppb

Material Handling Assumptions: Volume > 5000 ppb	186,348 cy 173 ac 142,250 m3	Acres corresponds to dredge
Volume > 125 ppb	1,483,156 cy 1,132,180 m3	footprint area
Volume > 250 ppb	1,171,585 cy 894,340 m3	rootprint area
Volume > 500 ppb	776,791 cy 592,970 m3	
Volume > 1000 ppb	586,788 cy 447,930 m3	
Volume > 50,000 ppb	0 cy 0 m3	
Solids Specific Gravity	2.47	
Fresh Water Density	62.4 lb/ft3	
In Situ Density	37.1% w/w 19.3% v/v 1.08 tons per cy	
Slurry Density (20% in situ)	9.0% w/w 3.9% v/v 0.89 tons per cy	Ogden Beeman
Dewatered Density (settling pond) Dewatered Density (CDF or landfill)	30% w/w 14.8% v/v 1.03 tons per cy 50% w/w 28.8% v/v 1.20 tons per cy	Montgomery Watson
Treated Density	50% w/w 28.8% v/v 1.20 tons per cy 93.7% w/w 60.0% v/v 1.33 tons per cy	Foth & VanDyke
HTTD Treatment Capacity	2,198,917 cy 1,650,000 tons	
Cap Volume	136,188 cy 103,960 m3	
Vitrification Treatment Capacity	8,028,121 cy in situ 6440000.00 tons	
Cost Estimating Parameters & Methodology:	600/	
Interest Rate Sales Tax	6.0% 5.5%	Not Used
Engineering, Procurement and Construction Mgmt	12.0%	Not Osed
Contractor Overhead and Profit - Dredging Only	15.0%	
Dredging	13.0/0	
Debris Sweep	\$16,000 per acre	Ogden Beeman
Dredge Monitoring (Water Quality)	\$3,000 per day	č
Sediment Removal QA	\$1,200 per day	
Hydraulic - 10-inch Cutterhead		
Site Preparation	\$100,000 per dredge launch site	рj
Mobilization - Equipment	\$135,000 per dredge	Ogden Beeman
Mobilization - Silt Curtain	\$35,000	Ogden Beeman
Shift Rate (10 hours)	\$5,700 per shift	Ogden Beeman
Dredge Rate	1050 cy in situ per 10 hour shift \$600,000 per dredge launch site	Ogden Beeman
Site Restoration Hydraulic - 2 12-inch Cutterheads	\$600,000 per dredge faunch site	pj
Site Preparation	\$803,400 LS	Ogden Beeman
Mobilization - Equipment	\$1,135,000 LS	Ogden Beeman
Mobilization - Silt Curtain	\$35,000	Ogden Beeman
Shift Rate (12 hours)	\$14,200 per shift	Ogden Beeman
Dredge Rate	2885 cy in situ per 12 hour shift	Ogden Beeman
Winter Over Equipment	\$285,000 per year	Ogden Beeman
Site Restoration	\$600,000 per dredge launch site	
Length of Piping	95,000 ft 18 mi	Distance to Town of Holland (map
		provded by Fred Swed) 11 mi of
		hard piping plus 7 mi of floating pipe
Piping Purchase/Installation	\$67 per ft	Ogden Beeman
Number of Road Crossings	4 each	pj, review map
Cost per Road Crossing	\$50,000 per crossing	pj, review map
Number of Booster Pumps	4 each	Ogden Beeman
Booster Pump Cost	\$2,500 per day	Ogden Beeman
High Temperature Thermal Desorption		
Setup Staging Area	\$50,000	рj
Mobilization/Site Prep	\$150,000	Maxymillian
Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol.	\$2 per ton 0.25 :1	
Sand Purchase and Deliver	\$6 per ton	Ole
Blending	\$25 per ton	Ole
HTTD (includes off-gas treatment)	\$75 per ton	Maxymillian
Stack Testing	\$50,000 LS	Maxymillian
Place Treated Material	\$3 per ton	•
Vitrification		
Capital Costs	\$36,000,000 LS	Unit Cost Study- Minergy
Operating Costs	\$6,800,000 per year	Unit Cost Study- Minergy
Vitrification (Unit Cost includes Cap and Oper Costs) Capping	\$24.0 per ton	Unit Cost Study- Minergy
Mobilization/Site Prep	\$200,000	Ogden Beeman
Area	2,943,858 sf 273,500 m2	- O
Sand Cap Depth	1.7 feet	
Placement Rate	\$6 per cy	Ogden Beeman
Sand Purchase	\$6 per ton	Ole
Sand Density	1.4 tons per cy	
Armored Cap Depth Cobbles	1.0 feet \$30 per cy	Means
Cap Placement QA	\$100,000 LS	Ogden Beeman
Long-term O&M	2% of capital	pj
Long-term Monitoring	\$400,000 per year	Anne LTM

Nearshore CDF	Arrowhead		Menasha		
Land Lease or Purchase		per sf	\$1.8		Ole
Length	8,000		9,200		Baird
Capping Volume	190,000		170,000		Baird
Seeding Area	280,000		250,000		Baird
Sheetpile Wall Length	8,000		9,200		Baird
Sheetpile Depth	30		30		based on bathymetry
Sheetpile Cost		per sf	\$19		pj B.: 1
Shot Rock Berm		per lf	\$550		Baird
Rip Rap		per lf	\$250 \$2		Baird
Place Treated Material		per cy per cy			pj Poird
Clean Soil Cap		per cy per sy	\$10 \$1		Baird Baird
Seeding Mitigation			\$1		Tim
Mitigation	\$10,000 \$10,000				Tim
Long term Monitoring					Anne LTM
Long-term Monitoring Long-term O&M	\$650,000	of capital			
Solidification	2/0	oi capitai			рј
Percent Lime	10.0%	(w/w)			Montgomery Watson
Lime		per ton	Mixing	\$25 per ton	pj, pug mill mixing
Enne	\$00	perton	Mixing	\$25 per ton	pj, pug iiiii iiixiiig
Dewatering - Upland Pond (2 cells)					
Land Lease or Purchase	\$1.80	ner sf			Ole
Area (1050 cy dredge rate)	636,049				2 days slurry + 13 wk solids * 2 cell
Perimeter (1050 cy dredge rate)	3,190				assume square
Area (2885 cy dredge rate)	5,010,182				2 days slurry + 13 wk solids * 2
rifett (2005 by though rate)	3,010,102	51			cells * 2 shifts per day
Perimeter (2885 cy dredge rate)	8,953	lf			assume square
Depth of Material in Dewatering Cell		feet			based on size at Arrowhead Park
Cell Retention Time		hours			Not Used
Cell Depth		feet			1101 0300
Mobilization	\$20,000				pj
Clear and Grub		per acre			pj
Berm Volume		cy per lf			2:1 slope, 8-foot top
Berm Construction		per cy			pj
Rough Grading	\$0.25				pj
Asphalt Liner	\$1.50				pj, 2 2-inch lifts
Demob/Disposal	\$10,000				pj
Regrade Berm Soils		per cy			pj
Seed/Sod		per sy			Baird
Dewatering - Mechanical		,			
Mobilization	\$100,000				pj
Holding Pond-Centrifuge		per bone dry ton			Global Dewatering
Water Treatment		,			
Flow Rate (1 10-inch Dredge; settling pond)	389	gpm			assume operate 24/7
Flow Rate (1 10-inch Dredge; settling pond) Unit, Purchase (1 10-inch Dredge; settling pond)		gpm LS			assume operate 24/7
Unit, Purchase (1 10-inch Dredge; settling pond)	\$684,675	LS			рj
	\$684,675	LS gpm			pj assume operate 24/7
Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF)	\$684,675 456	LS gpm LS			рj
Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF)	\$684,675 456 \$752,984	LS gpm LS gpm			pj assume operate 24/7 pj
Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges)	\$684,675 456 \$752,984 3,505	LS gpm LS gpm LS			pj assume operate 24/7 pj assume operate 24/7
Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges)	\$684,675 456 \$752,984 3,505 \$2,561,265	LS gpm LS gpm LS gpm LS gpm			pj assume operate 24/7 pj assume operate 24/7 pj
Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-inch Dredges)	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991	LS gpm LS gpm LS gpm LS gpm gpm			pj assume operate 24/7 pj assume operate 24/7 pj
Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering)	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892	LS gpm LS gpm LS gpm LS gpm gpm			pj assume operate 24/7 pj assume operate 24/7 pj
Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering)	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40	LS gpm LS gpm LS gpm LS gpm LS gpm gpm LS			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7
Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-inch Dredges; settling pond) Flow Rate (2-12-inch Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator)	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40	LS gpm LS gpm LS gpm gpm LS per 1,000 gallons per day			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to
Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40	LS gpm LS gpm LS gpm gpm LS per 1,000 gallons per day			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day
Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40	LS gpm LS gpm LS gpm gpm LS per 1,000 gallons per day			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to
Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-inch Dredges) Flow Rate (2-12-inch Dredges) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial)	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000	LS gpm LS gpm LS gpm gpm gpm LS per 1,000 gallons per day feet			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed
Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-inch Dredges) Flow Rate (2-12-inch Dredges) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000	LS gpm LS gpm LS gpm gpm ppm LS gpm gpm dS gpm gpm LS per 1,000 gallons per day feet			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed
Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-inch Dredges) Flow Rate (2-12-inch Dredges) Flow Rate (2-12-inch Dredges) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000	LS gpm LS gpm LS gpm gpm LS gpm gpm ppm LS per 1,000 gallons per day feet			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed
Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000	LS gpm LS gpm LS gpm gpm LS gpm gpm tLS gpm gpm tLS per 1,000 gallons per day feet per ton hours hours			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed
Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA)	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2,80 2 0.55 \$43	LS gpm LS gpm LS gpm gpm LS gpm gpm gpm pr 1,000 gallons per day feet per ton hours hours per ton			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj pj pj St. Paul
Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-inch Dredges) Flow Rate (2-12-inch Dredges) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (TSCA)	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000 \$2.80 2 0.5 \$43 \$55	LS gpm LS gpm LS gpm gpm LS gpm gpm ts per 1,000 gallons per day feet per ton hours hours hours per ton per ton			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul
Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-inch Dredges) Flow Rate (2-12-inch Dredges) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000 \$2.80 2 0.5 \$43 \$55 \$75	LS gpm LS gpm LS gpm gpm est S gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per ton per hour			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj
Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-inch Dredges) Flow Rate (2-12-inch Dredges) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000 \$2,000 \$2,80 2 0.5 \$43 \$55 \$75	LS gpm LS gpm LS gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per ton per ton per ton per ton per hour tons			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj
Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000 \$2.80 2 0.5 \$43 \$55 \$75	LS gpm LS gpm LS gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per ton per ton per ton per ton per hour tons			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj
Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-inch Dredges) Flow Rate (2-12-inch Dredges) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment (QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2,80 2 0,55 \$43 \$55 \$75 32 1,000,000	LS gpm LS gpm LS gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per ton per ton per ton per ton per hour tons			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj
Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-inch Dredges) Flow Rate (2-12-inch Dredges) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment (QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000 \$2.80 2 0.5 \$43 \$55 \$75 32 1,000,000	LS gpm LS gpm LS gpm gpm LS gpm gpm LS est			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj
Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-inch Dredges) Flow Rate (2-12-inch Dredges) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2.80 2 0.5 \$43 \$55 \$75 32 1,000,000 \$705,099 140	LS gpm LS gpm LS gpm gpm LS gpm gpm est			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj
Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-inch Dredges) Flow Rate (2-12-inch Dredges) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2,80 2 0,5 \$43 \$555 \$75 32 1,000,000 \$705,099 140 \$5	LS gpm LS gpm LS gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj
Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000 \$2.80 2 0.5 \$43 \$55 \$75 32 1,000,000 \$705,099 140 \$5 \$100,000	LS gpm LS gpm LS gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per ton per hour tons LS acres per cy per acre			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj
Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-inch Dredges) Flow Rate (2-12-inch Dredges) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000 \$2,80 2 0.55 \$43 \$55 \$75 32 1,000,000 \$705,099 140 \$5 \$100,000 \$500,000	LS gpm LS gpm LS gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per ton per hour tons LS acres per cy per acre per year			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj
Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-inch Dredges) Flow Rate (2-12-inch Dredges) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost Post-closure Monitoring	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000 \$2.80 2 0.5 \$43 \$55 \$75 32 1,000,000 \$705,099 140 \$5 \$100,000	LS gpm LS gpm LS gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per ton per hour tons LS acres per cy per acre per year			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj
Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-inch Dredges) Flow Rate (2-12-inch Dredges) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost Post-closure Monitoring Institutional Controls	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,400 20,000 \$2.80 2 0.5 \$43 \$555 \$75 32 1,000,000 \$705,099 140 \$5 \$100,000 \$500,000 \$30,000	LS gpm LS gpm LS gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per ton per hour tons LS acres per cy per acre per year			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj pj
Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost Post-closure Monitoring Institutional Controls Public Education Program	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2,80 2 0,5 \$43 \$555 \$75 32 1,000,000 \$705,099 140 \$5 \$100,000 \$500,000 \$30,000	LS gpm LS gpm LS gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per ton per hour tons LS acres per cy per acre per year			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj pj pj pt St. Paul St. Paul pj pj pj
Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Area Local Siting Fee Closure Cap Operating Cost Post-closure Monitoring Institutional Controls Public Education Program O&M Plans	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2,80 2 0,55 \$43 \$555 \$75 32 1,000,000 \$705,099 140 \$\$5 \$100,000 \$500,000 \$100,000	LS gpm LS gpm LS gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per ton per hour tons LS acres per cy per acre per year			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj pj St. Paul St. Paul pj pj
Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-inch Dredges) Flow Rate (2-12-inch Dredges) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost Post-closure Monitoring Institutional Controls Public Education Program O&M Plans Deed Restrictions	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2,80 2 0,5 \$43 \$555 \$75 32 1,000,000 \$705,099 140 \$5 \$100,000 \$500,000 \$30,000	LS gpm LS gpm LS gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per ton per hour tons LS acres per cy per acre per year			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj pj pj pt St. Paul St. Paul pj pj pj
Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-inch Dredges) Flow Rate (2-12-inch Dredges) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost Post-closure Monitoring Institutional Controls Public Education Program O&M Plans Deed Restrictions Annual Costs	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000 \$2.80 2 0.5 \$433 \$555 \$75 32 1,000,000 \$705,099 140 \$5 \$100,000 \$500,000 \$100,000 \$20,000	LS gpm LS gpm LS gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per ton per hour tons LS acres per cy per acre per year			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj pj pj
Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges) Flow Rate (2-12-in Dredges) Flow Rate (2-12-in Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost Post-closure Monitoring Institutional Controls Public Education Program O&M Plans Deed Restrictions Annual Costs Public Education Program	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000 \$2,80 2 0.5 \$43 \$555 \$75 32 1,000,000 \$705,099 140 \$5 \$100,000 \$500,000 \$100,000 \$20,000 \$30,000	LS gpm LS gpm LS gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per ton per hour tons LS acres per cy per acre per year			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj
Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges) Flow Rate (2-12-in Dredges) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost Post-closure Monitoring Institutional Controls Public Education Program O&M Plans Deed Restrictions Annual Costs Public Education Program Maintaining O&M Plans	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2,80 2 0,5 \$43 \$55 \$75 32 1,000,000 \$705,099 140 \$5 \$100,000 \$50,000 \$30,000 \$100,000 \$20,000	LS gpm LS gpm LS gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per ton per hour tons LS acres per cy per acre per year			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj
Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-inch Dredges) Flow Rate (2-12-inch Dredges) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost Post-closure Monitoring Institutional Controls Public Education Program O&M Plans Deed Restrictions Annual Costs Public Education Program Maintaining O&M Plans Reporting	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0.40 \$200 20,000 \$2,000 \$2,000 \$705,099 140 \$5 \$100,000 \$5100,000 \$500,000 \$30,000 \$30,000 \$30,000 \$30,000 \$30,000 \$30,000	LS gpm LS gpm LS gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per ton per hour tons LS acres per cy per acre per year			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj st. Paul St. Paul pj
Unit, Purchase (1 10-inch Dredge; settling pond) Flow Rate (1 10-inch Dredge; CDF) Unit, Purchase (1 10-inch Dredge; CDF) Flow Rate (2 12-inch Dredges) Unit, Purchase (2 12-inch Dredges) Flow Rate (2-12-in Dredges) Flow Rate (2-12-in Dredges) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Off-Site Disposal (Existing NR 500 Commercial) Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer Facility Construction Dedicated NR 500 Monofill Landfill Construction Landfill Area Local Siting Fee Closure Cap Operating Cost Post-closure Monitoring Institutional Controls Public Education Program O&M Plans Deed Restrictions Annual Costs Public Education Program Maintaining O&M Plans	\$684,675 456 \$752,984 3,505 \$2,561,265 2,991 1,252 \$1,380,892 \$0,40 \$200 20,000 \$2,80 2 0,5 \$43 \$55 \$75 32 1,000,000 \$705,099 140 \$5 \$100,000 \$50,000 \$30,000 \$100,000 \$20,000	LS gpm LS gpm LS gpm gpm LS gpm gpm LS per 1,000 gallons per day feet per ton hours hours per ton per ton per hour tons LS acres per cy per acre per year			pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Construc	tion Manageme	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth C Long-term Monitoring	of Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term O&	kM Costs			\$4,513,889
	Total Project Capital and O&M Co	st			\$4,500,000

ALTERNATIVE B: Monitored Natural Recovery

MONITORING/INSTITUTIONAL CONTROLS

Capital Items	Quantity	Units		Cost
Public Education Program	1	LS		\$100,000
O&M Plans	1	LS		\$20,000
Deed Restrictions	1	LS		\$5,000
Direct Capital:				\$125,000
Engineering, Procurement & Co.	nstruction Managem	ent:		15,000
Total Capital:				\$140,000
Present Worth of Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring		40	\$600,000	\$9,027,778
Public Education Program		40	\$30,000	\$451,389
Maintaining O&M Plans		40	\$800	\$12,037
Reporting		40	\$20,000	\$300,926
Total Present Worth, Longer Ter	rm O&M Costs			\$9,792,130
Total Project Capital and O&!	M Cost			\$9,900,000

ALTERNATIVE C1: Dredge Sediment With Disposal at Existing NR 500 Commercial Disposal Facility (Passive Dewatering)

SEDIMENT REMOVAL (10-INCH CUTTERHEAD)

Capital Items	Quantity	Units		Cost
Site Preparation	1	Each		\$100,000
Mobilization - Equipment and Silt Curtain	1	LS		\$170,000
Debris Sweep	173	ac		\$2,768,000
Dredging - 12 hour shifts	178	Day	1.369230769	\$1,014,600
Dredge Monitoring (Water Quality)	178	Day		\$534,000
Sediment Removal QA	178	Day		\$213,600
Site Restoration	1	Each		\$600,000
Direct Capital:				\$5,400,200
Engineering, Procurement & Co	nstruction Managem	ent:		648,024
Contractor Overhead/Profit:	_			810,030
Total Capital:				\$6,900,000

SEDIMENT DEWATERING (GRAVITY)

Capital Items	Oua	antity	Units	Cost
Land Lease or Purchase	-	5,049	sf	\$1,144,889
Mobilization		1	LS	\$20,000
Clear and Grub	636	5,049	sf	\$29,203
Berm Construction	33,	,083	cy	\$198,496
Rough Grading	636	5,049	sf	\$159,012
Liner Placement	636	5,049	sf	\$954,074
Demob/Disposal		1	LS	\$10,000
Regrade	33,	,083	cy	\$198,496
Seed/Sod	70,	,672	sy	\$70,672
	Direct Capital:			\$2,784,842
	Engineering, Procurement & Construction M	Managemei	nt:	334,181
	Total Capital:			\$3,100,000

WATER TREATMENT

Capital Items	Quantity	Units	Cost
Unit Purchase	389	gpm	\$684,675
Water Treatment (Includes Operator)	139,108,188	gal	\$55,643
Water Treatment QA	249	day	\$49,800
Direct Capital:			\$790,119
Engineering, Procurement &	& Construction Management	nt:	94,814
			·

SEDIMENT DISPOSAL (Existing NR 500 Commercial Disposal Facility)

Capital Items	Quantity	Units	Cost
Solidification	249,141	ton	\$6,228,525
Lime Purchase	24,915	ton	\$1,494,900
Soil Loading	249,141	ton	\$697,595
Soil Hauling	249,141	ton	\$1,167,848
Tipping Fees (non-TSCA)	249,141	ton	\$10,713,063

 Direct Capital:
 \$20,301,931

 Engineering, Procurement & Construction Management:
 2,436,232

\$900,000

Total Capital: \$22,700,000

INSTITUTIONAL CONTROLS

Capital Items	Quantity	Units	Cost
Deed Restrictions	1	LS	\$5,000
	Direct Capital: Engineering, Procurement & Construction Management	ent:	\$5,000 600
	Total Capital:		\$5,600

Present Worth of Longer Term Operating CostsYearsAnnual CostLong-term Monitoring (no action)40\$300,000\$4,513,889

Total Present Worth, Longer Term O&M Costs \$4,513,889

Total Project Capital and O&M Cost \$4,500,000

TOTAL COST \$38,100,000

ALTERNATIVE C2A: Dredge Sediment with Combined Dewatering and Disposal Facility

Total Capital:

SEDIMENT REMOVAL (12-INCH CUTTERHEAD)

Capital Items	Quantity	Units		Cost
Site Preparation	1	Each		\$803,400
Mobilization - Equipment and Silt Curtain	1	LS		\$1,170,000
Debris Sweep	173	ac		\$2,768,000
Dredging - 2 12-hour shifts	33	Day	0.181318681	\$937,200
Dredge Monitoring (Water Quality)	33	Day		\$198,000
Sediment Removal QA	33	Day		\$79,200
Piping	95,000	ft		\$6,365,000
Road Crossings	4	Each		\$200,000
Booster Pumps	4	Each		\$330,000
Winter Over All Equipment	1	year		\$285,000
Site Restoration	1	Each		\$600,000
Direct Capital:				\$13,735,800

Engineering, Procurement & Construction Management: 1,648,296
Contractor Overhead/Profit: 2,060,370

Total Capital: \$17,400,000

WATER TREATMENT

Canital Itams	Quantity	Units		Cost
Capital Items Unit Purchase	Quantity 3,505	gpm		\$2,561,265
Water Treatment (Includes Operator)	163,000,121	gal		\$65,200
Water Treatment QA	33	day		\$13,200
Piping	20,000	ft		\$1,340,000
Direct Capital:				\$3,979,666
Engineering, Procurement &	& Construction Managem	ent:		477,560
5				
Total Capital:				\$4,500,000
SEDIN	MENT DISPOSAL (Dedicated N	R 500 Monofill)	
Capital Items	Quantity	Units		Cost
Landfill Construction	1	LS		\$705,099
Local Siting Fee	124,646	cy		\$623,230
Closure	4	acres		\$386,300
Direct Capital:				\$1,714,628
Engineering, Procurement &	& Construction Managem	ent:		205,755
T. 10 1.1				04.000.000
Total Capital:				\$1,900,000
Present Worth of Longer Term Operating C	osts	Years	Annual Cost	
Operations		10	\$500,000	\$3,680,044
Post Closure Monitoring		40	\$30,000	\$451,389
Total Present Worth, Longe	er Term O&M Costs			\$4,131,432
Total Project Capital and	O&M Cost			\$6,000,000
	INSTITUTIO	ONAL CON	TROLS	
Capital Items	Quantity	Units		Cost
Deed Restrictions	1	LS		\$5,000
Direct Conitals				¢5 000
Direct Capital: Engineering, Procurement &	& Construction Managem	ent:		\$5,000 600
Total Capital:				\$5,600
Present Worth of Longer Term Operating C Long-term Monitoring (no action)	Costs	Years 40	Annual Cost \$300,000	\$4,513,889
Total Present Worth, Longe	er Term O&M Costs			\$4,513,889
Total Project Capital and				\$4,500,000
TOTAL COST				\$32,400,000
ALTERNATIVE C2B: Dredge Sediment with	h Separate Dewateri	ing and Disp	osal Facility	
SEDI	MENT REMOVAL	(12-INCH C	UTTERHEAD)	
Capital Items	Quantity 1	Units Each		Cost \$803,400
Site Preparation Mobilization - Equipment and Silt Curtain	1	LS		\$1,170,000
Debris Sweep	173	ac		\$2,768,000
Dredging - 2 12-hour shifts	33	Day	0.181318681	\$937,200
Dredge Monitoring (Water Quality)	33	Day		\$198,000
Sediment Removal QA	33	Day		\$79,200
Piping Road Crossings	95,000 4	ft Each		\$6,365,000 \$200,000
Booster Pumps	4	Each		\$330,000
Winter Over All Equipment	1	year		\$285,000
Site Restoration	1	Each		\$600,000
Direct Capital:				\$13,735,800
Engineering, Procurement &	& Construction Managem	ent:		1,648,296
Contractor Overhead/Profit:				2,060,370
Total Canital				£17 400 000
Total Capital:				\$17,400,000

SEDIMENT DEWATERING (GRAVITY - NR 213)

				,	
Capital Items		Quantity	Units		Cost
Land Lease or Purchase		5,010,182	sf		\$9,018,328
Mobilization		1	LS		\$20,000
Clear and Grub		5,010,182	sf		\$230,036
Berm Construction Rough Grading		92,850 5,010,182	cy sf		\$557,099 \$1,252,545
Liner Placement		5,010,182	sf		\$7,515,273
Demob/Disposal		1	LS		\$10,000
Regrade		92,850	cy		\$557,099
Seed/Sod		556,687	sy		\$556,687
	Pi - 10 21				010 515 045
	Direct Capital:	ti M	4-		\$19,717,067
	Engineering, Procurement & Constr	uction ivianagem	ent.		2,366,048
	Total Capital:				\$22,100,000
		WATER T	REATMEN	Γ	
Canital Itams		Onontitu	Unite		Cost
Capital Items Unit Purchase		Quantity 2,991	Units gpm		\$2,561,265
Water Treatment (Include	des Operator)	139,108,188	gal		\$55,643
Water Treatment QA	. ,	91	day		\$18,200
Piping		20,000	ft		\$1,340,000
					** ***
	Direct Capital:				\$3,975,109
	Engineering, Procurement & Constr	uction Managem	ent:		477,013
	Total Capital:				\$4,500,000
	SEDIMENT	DISPOSAL (Dedicated N	R 500 Monofill)	
Capital Items		Quantity	Units		Cost
Solidification		249,141	ton		\$6,228,525
Lime Purchase		24,915	ton		\$1,494,900
Sediment Loading		249,140	ton		\$697,593
Sediment Hauling		249,140	ton		\$1,167,846
Landfill Construction		1	LS		\$705,099
		124,646			\$623,230
Local Siting Fee Closure		4	cy		
Ciosure		4	acres		\$386,300
	Direct Capital:				\$11,303,493
	Engineering, Procurement & Constr	uction Manageme	ent:		1,356,419
	Engineering, Frocurement & Consti	uction managem	unt.		1,550,417
	Total Capital:				\$12,700,000
Present Worth o	f Longer Term Operating Costs		Years	Annual Cost	
Operations			10	\$500,000	\$3,680,044
Post Closure Monitoring	3		40	\$30,000	\$451,389
	Total Present Worth, Longer Term C	O&M Costs			\$4,131,432
	Total Project Capital and O&M C	Cost			\$16,800,000
		INSTITUTIO	ONAL CON	FROLS	
Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
Deed Restrictions		1	LS		\$5,000
	Direct Capital:				\$5,000
	Engineering, Procurement & Constr	uction Managem	ent:		600
	Total Capital:				\$5,600
	f Longer Term Operating Costs		Years	Annual Cost	ΦA 512 000
Long-term Monitoring (no action)		40	\$300,000	\$4,513,889
	Total Present Worth, Longer Term C	O&M Costs			\$4,513,889
	Total Project Capital and O&M C	Cost			\$4,500,000
	TOTAL COST				
	TOTAL COST				\$65,300,000

ALTERNATIVE C3: Dredge with Disposal at Existing NR 500 Commercial Disposal Facility (Mechanical Dewatering)

SEDIMENT REMOVAL (10-INCH CUTTERHEAD)

Capital Items		Quantity	Units		Cost
Site Preparation		1	Each		\$100,000
Mobilization - Equipme	ent and Silt Curtain	1	LS		\$170,000
Debris Sweep		173	ac	1.260220762	\$2,768,000
Dredging - 12 hour shift		178	Day	1.369230769	\$1,014,600
Dredge Monitoring (Wa	iter Quanty)	178	Day		\$534,000
Sediment Removal QA Site Restoration		178 1	Day Each		\$213,600
Site Restoration		1	Eacii		\$600,000
	Direct Capital:				\$5,400,200
	Engineering, Procurement & Constru	ction Managem	ent.		648,024
	Contractor Overhead/Profit:				810,030
	Total Capital:				\$6,900,000
	SEDIMEN	T DEWATE	CRING (MEC	CHANICAL)	
Capital Items		Quantity	Units		Cost
Mobilization/Site Prep		1	LS		\$100,000
Dewatering		74,742	bdt		\$5,979,371
	Direct Capital:				\$6,079,371
	Engineering, Procurement & Constru	ction Managem	ent:		729,525
	<i>g g</i> ,				
	Total Capital:				\$6,800,000
		WATER T	REATMENT	Γ	
Capital Items		Quantity	Units		Cost
Unit Purchase		456	gpm		\$1,380,892
Water Treatment (Inclu	des Operator)	163,000,121	gal		\$65,200
Water Treatment QA		249	day		\$49,800
	Direct Capital:				\$1,495,892
	Engineering, Procurement & Constru	ction Managem	ent:		179,507
	Total Capital:				\$1,700,000
		I. (Evisting N	NR 500 Com	nercial Disnosal Facility)	\$1,700,000
				nercial Disposal Facility)	
Capital Items		L (Existing ! Quantity	NR 500 Comi Units	nercial Disposal Facility)	\$1,700,000 Cost
Capital Items Soil Loading				nercial Disposal Facility)	
•		Quantity	Units	nercial Disposal Facility)	Cost
Soil Loading Soil Hauling	SEDIMENT DISPOSA	Quantity 149,484	Units ton	nercial Disposal Facility)	Cost \$418,556
Soil Loading Soil Hauling Tipping Fees (non-TSC	SEDIMENT DISPOSA	Quantity 149,484 149,484 149,484	Units ton ton	nercial Disposal Facility)	Cost \$418,556 \$700,708 \$6,427,824
Soil Loading Soil Hauling	SEDIMENT DISPOSA	Quantity 149,484 149,484	Units ton ton	nercial Disposal Facility)	Cost \$418,556 \$700,708
Soil Loading Soil Hauling Tipping Fees (non-TSC	SEDIMENT DISPOSA	Quantity 149,484 149,484 149,484	Units ton ton	mercial Disposal Facility)	Cost \$418,556 \$700,708 \$6,427,824 \$0
Soil Loading Soil Hauling Tipping Fees (non-TSC	SEDIMENT DISPOSA A) Direct Capital:	Quantity 149,484 149,484 149,484 0	Units ton ton ton	nercial Disposal Facility)	Cost \$418,556 \$700,708 \$6,427,824 \$0 \$7,547,088
Soil Loading Soil Hauling Tipping Fees (non-TSC	SEDIMENT DISPOSA	Quantity 149,484 149,484 149,484 0	Units ton ton ton	nercial Disposal Facility)	Cost \$418,556 \$700,708 \$6,427,824 \$0
Soil Loading Soil Hauling Tipping Fees (non-TSC	SEDIMENT DISPOSA A) Direct Capital: Engineering, Procurement & Constru	Quantity 149,484 149,484 149,484 0	Units ton ton ton	mercial Disposal Facility)	Cost \$418,556 \$700,708 \$6,427,824 \$0 \$7,547,088 905,651
Soil Loading Soil Hauling Tipping Fees (non-TSC	SEDIMENT DISPOSA A) Direct Capital:	Quantity 149,484 149,484 149,484 0	Units ton ton ton	nercial Disposal Facility)	Cost \$418,556 \$700,708 \$6,427,824 \$0 \$7,547,088
Soil Loading Soil Hauling Tipping Fees (non-TSC	SEDIMENT DISPOSA A) Direct Capital: Engineering, Procurement & Constru Total Capital:	Quantity 149,484 149,484 149,484 0 ction Managem	Units ton ton ton		Cost \$418,556 \$700,708 \$6,427,824 \$0 \$7,547,088 905,651
Soil Loading Soil Hauling Tipping Fees (non-TSC Tipping Fees (TSCA)	SEDIMENT DISPOSA A) Direct Capital: Engineering, Procurement & Constru Total Capital:	Quantity 149,484 149,484 149,484 0 ction Managem	Units ton ton ton ton ent:		Cost \$418,556 \$700,708 \$6,427,824 \$0 \$7,547,088 905,651 \$8,500,000
Soil Loading Soil Hauling Tipping Fees (non-TSC Tipping Fees (TSCA)	SEDIMENT DISPOSA A) Direct Capital: Engineering, Procurement & Constru Total Capital:	Quantity 149,484 149,484 149,484 0 ction Managem	Units ton ton ton ton ent:		Cost \$418,556 \$700,708 \$6,427,824 \$0 \$7,547,088 905,651
Soil Loading Soil Hauling Tipping Fees (non-TSC Tipping Fees (TSCA)	SEDIMENT DISPOSA A) Direct Capital: Engineering, Procurement & Constru Total Capital:	Quantity 149,484 149,484 149,484 0 ction Managem STITUTION Quantity	Units ton ton ton ton ent:		Cost \$418,556 \$700,708 \$6,427,824 \$0 \$7,547,088 905,651 \$8,500,000
Soil Loading Soil Hauling Tipping Fees (non-TSC Tipping Fees (TSCA)	SEDIMENT DISPOSA A) Direct Capital: Engineering, Procurement & Constru Total Capital: IN: Direct Capital:	Quantity 149,484 149,484 149,484 0 ction Managem STITUTION Quantity 1	Units ton ton ton ent: HAL CONTR Units LS		Cost \$418,556 \$700,708 \$6,427,824 \$0 \$7,547,088 905,651 \$8,500,000 Cost \$5,000
Soil Loading Soil Hauling Tipping Fees (non-TSC Tipping Fees (TSCA)	SEDIMENT DISPOSA A) Direct Capital: Engineering, Procurement & Constru Total Capital:	Quantity 149,484 149,484 149,484 0 ction Managem STITUTION Quantity 1	Units ton ton ton ent: HAL CONTR Units LS		Cost \$418,556 \$700,708 \$6,427,824 \$0 \$7,547,088 905,651 \$8,500,000
Soil Loading Soil Hauling Tipping Fees (non-TSC Tipping Fees (TSCA)	SEDIMENT DISPOSA A) Direct Capital: Engineering, Procurement & Constru Total Capital: IN: Direct Capital: Engineering, Procurement & Constru	Quantity 149,484 149,484 149,484 0 ction Managem STITUTION Quantity 1	Units ton ton ton ent: HAL CONTR Units LS		Cost \$418,556 \$700,708 \$6,427,824 \$0 \$7,547,088 905,651 \$8,500,000
Soil Loading Soil Hauling Tipping Fees (non-TSC Tipping Fees (TSCA)	SEDIMENT DISPOSA A) Direct Capital: Engineering, Procurement & Constru Total Capital: IN: Direct Capital:	Quantity 149,484 149,484 149,484 0 ction Managem STITUTION Quantity 1	Units ton ton ton ent: HAL CONTR Units LS		Cost \$418,556 \$700,708 \$6,427,824 \$0 \$7,547,088 905,651 \$8,500,000 Cost \$5,000
Soil Loading Soil Hauling Tipping Fees (non-TSC Tipping Fees (TSCA) Capital Items Deed Restrictions	SEDIMENT DISPOSA A) Direct Capital: Engineering, Procurement & Constru Total Capital: Direct Capital: Engineering, Procurement & Constru Total Capital:	Quantity 149,484 149,484 149,484 0 ction Managem STITUTION Quantity 1	Units ton ton ton ton ent: Units LS ent:	OLS	Cost \$418,556 \$700,708 \$6,427,824 \$0 \$7,547,088 905,651 \$8,500,000
Soil Loading Soil Hauling Tipping Fees (non-TSC Tipping Fees (TSCA) Capital Items Deed Restrictions Present Worth of	SEDIMENT DISPOSA A) Direct Capital: Engineering, Procurement & Constru Total Capital: Direct Capital: Engineering, Procurement & Constru Total Capital: Engineering, Procurement & Constru Total Capital: f Longer Term Operating Costs	Quantity 149,484 149,484 149,484 0 ction Managem STITUTION Quantity 1	Units ton ton ton ton ent: Units LS ent: Years	OLS Annual Cost	Cost \$418,556 \$700,708 \$6,427,824 \$0 \$7,547,088 905,651 \$8,500,000 \$5,000 600
Soil Loading Soil Hauling Tipping Fees (non-TSC Tipping Fees (TSCA) Capital Items Deed Restrictions	SEDIMENT DISPOSA A) Direct Capital: Engineering, Procurement & Constru Total Capital: Direct Capital: Engineering, Procurement & Constru Total Capital: Engineering, Procurement & Constru Total Capital: f Longer Term Operating Costs	Quantity 149,484 149,484 149,484 0 ction Managem STITUTION Quantity 1	Units ton ton ton ton ent: Units LS ent:	OLS	Cost \$418,556 \$700,708 \$6,427,824 \$0 \$7,547,088 905,651 \$8,500,000
Soil Loading Soil Hauling Tipping Fees (non-TSC Tipping Fees (TSCA) Capital Items Deed Restrictions Present Worth of	SEDIMENT DISPOSA A) Direct Capital: Engineering, Procurement & Constru Total Capital: Direct Capital: Engineering, Procurement & Constru Total Capital: Engineering, Procurement & Constru Total Capital: f Longer Term Operating Costs	Quantity 149,484 149,484 0 ction Managem STITUTION Quantity 1	Units ton ton ton ton ent: Units LS ent: Years	OLS Annual Cost	Cost \$418,556 \$700,708 \$6,427,824 \$0 \$7,547,088 905,651 \$8,500,000 \$5,000 600
Soil Loading Soil Hauling Tipping Fees (non-TSC Tipping Fees (TSCA) Capital Items Deed Restrictions Present Worth of	SEDIMENT DISPOSA A) Direct Capital: Engineering, Procurement & Constru Total Capital: Engineering, Procurement & Constru Total Capital: Engineering, Procurement & Constru Total Capital: f Longer Term Operating Costs no action) Total Present Worth, Longer Term O	Quantity 149,484 149,484 0 ction Managem STITUTION Quantity 1 ction Managem	Units ton ton ton ton ent: Units LS ent: Years	OLS Annual Cost	Cost \$418,556 \$700,708 \$6,427,824 \$0 \$7,547,088 905,651 \$8,500,000 Cost \$5,000 \$5,000 \$5,000 \$5,600 \$4,513,889
Soil Loading Soil Hauling Tipping Fees (non-TSC Tipping Fees (TSCA) Capital Items Deed Restrictions Present Worth of	SEDIMENT DISPOSA A) Direct Capital: Engineering, Procurement & Constru Total Capital: Engineering, Procurement & Constru Total Capital: Engineering, Procurement & Constru Total Capital: f Longer Term Operating Costs (no action)	Quantity 149,484 149,484 0 ction Managem STITUTION Quantity 1 ction Managem	Units ton ton ton ton ent: Units LS ent: Years	OLS Annual Cost	Cost \$418,556 \$700,708 \$6,427,824 \$0 \$7,547,088 905,651 \$8,500,000 \$5,000 \$5,000 \$5,600
Soil Loading Soil Hauling Tipping Fees (non-TSC Tipping Fees (TSCA) Capital Items Deed Restrictions Present Worth of	SEDIMENT DISPOSA A) Direct Capital: Engineering, Procurement & Constru Total Capital: Engineering, Procurement & Constru Total Capital: Engineering, Procurement & Constru Total Capital: f Longer Term Operating Costs (no action) Total Present Worth, Longer Term O Total Project Capital and O&M Co	Quantity 149,484 149,484 0 ction Managem STITUTION Quantity 1 ction Managem	Units ton ton ton ton ent: Units LS ent: Years	OLS Annual Cost	Cost \$418,556 \$700,708 \$6,427,824 \$0 \$7,547,088 905,651 \$8,500,000 \$5,000 600 \$4,513,889 \$4,513,889 \$4,500,000
Soil Loading Soil Hauling Tipping Fees (non-TSC Tipping Fees (TSCA) Capital Items Deed Restrictions Present Worth of	SEDIMENT DISPOSA A) Direct Capital: Engineering, Procurement & Constru Total Capital: Engineering, Procurement & Constru Total Capital: Engineering, Procurement & Constru Total Capital: f Longer Term Operating Costs no action) Total Present Worth, Longer Term O	Quantity 149,484 149,484 0 ction Managem STITUTION Quantity 1 ction Managem	Units ton ton ton ton ent: Units LS ent: Years	OLS Annual Cost	Cost \$418,556 \$700,708 \$6,427,824 \$0 \$7,547,088 905,651 \$8,500,000 Cost \$5,000 \$5,000 \$5,000 \$5,600 \$4,513,889

SEDIMENT REMOVAL (10-INCH CUTTERHEAD)

			•	· ·	
G 1.11			** *.		
Capital Items		Quantity	Units		Cost
Site Preparation	107.0	1	Each		\$100,000
Mobilization - Equipme	ent and Silt Curtain	1	LS		\$170,000
Debris Sweep		173	ac		\$2,768,000
Dredging - 12 hour shirt		178	Day	1.369230769	\$1,014,600
Dredge Monitoring (W	- **	178	Day		\$534,000
Sediment Removal QA		178	Day		\$213,600
Site Restoration		1	Each		\$600,000
	Direct Capital:				\$5,400,200
	Engineering, Procurement & Cons	truction Managem	ent:		648,024
	Contractor Overhead/Profit:				810,030
	Total Capital:				\$6,900,000
	Tomi cupiuii				30,200,000
		WATER T	REATMEN	г	
Capital Items		Quantity	Units		Cost
Unit Purchase		456	gpm		\$752,984
Water Treatment (Inclu	ides Operator)	163,000,121	gal		\$65,200
Water Treatment QA		249	day		\$49,800
	Direct Capital:				\$867,984
	•				
	Engineering, Procurement & Cons	truction Managem	ent:		104,158
	Total Capital:				\$1,000,000
		DE CONSTRI	UCTION N	HEN A CH A	
	C	CDF CONSTRU		IENASHA	
Capital Items		Quantity	Units		Cost
Mobilization/Site Prep		27,778	sf		\$50,000
Shot Rock/Rip Rap		9,200	lf		\$7,360,000
Sheetpile Placement		276,000	sf		\$5,244,000
Clean Soil Cap		170,000 250,000	cy		\$1,700,000
Seeding Mitigation		250,000 52	sy		\$250,000
Mitigation		32	acre		\$516,529
	Direct Capital:				\$15,120,529
	Engineering, Procurement & Cons	truction Managem	ent:		1,814,463
	Total Capital:				\$16,934,992
Present Worth o	of Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	10,000	\$150,463
Long-term Monitoring			40	650,000	\$9,780,093
Long-term O&M			40	338,700	\$5,096,178
	Total Present Worth, Longer Term	O&M Costs			\$15,026,734
	Total Project Capital and O&M	Cost			\$32,000,000
		INSTITUTIO		I KULS	
Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital:				\$5,000
	Engineering, Procurement & Cons	truction Managem	ent:		600
	Total Capital:				\$5,600
Present Worth of Long-term Monitoring	of Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term	O&M Costs			\$4,513,889
	Total Project Capital and O&M				\$4,500,000
	TOTAL COST				\$44,400,000

ALTERNATIVE E: Dredge Sediment and Thermal Treatment

SEDIMENT REMOVAL (12-INCH CUTTERHEAD)

Capital Items	Quantity	Units		Cost
Site Preparation	1	Each		\$803,400
Mobilization - Equipment and Silt Curtain	1	LS		\$1,170,000
Debris Sweep	173	ac		\$2,768,000
Dredging - 2 12-hour shifts	33	Day	0.181318681	\$937,200
Dredge Monitoring (Water Quality)	33	Day		\$198,000
Sediment Removal QA	33	Day		\$79,200
Piping	95,000	ft		\$6,365,000
Road Crossings	4	Each		\$200,000
Booster Pumps	4	Each		\$330,000
Winter Over All Equipment	1	year		\$285,000
Site Restoration	1	Each		\$600,000
Direct Capital:				\$13,735,800
Engineering, Procurement & C	onstruction Managem	ent:		1,648,296
Contractor Overhead/Profit:	· ·			2,060,370
Total Capital:				\$17,400,000

SEDIMENT DEWATERING (GRAVITY)

Capital Items	Quantity	Units	Cost
Land Lease or Purchase	5,010,182	sf	\$9,018,328
Mobilization	1	LS	\$20,000
Clear and Grub	5,010,182	sf	\$230,036
Berm Construction	92,850	cy	\$557,099
Rough Grading	5,010,182	sf	\$1,252,545
Liner Placement	5,010,182	sf	\$7,515,273
Demob/Disposal	1	LS	\$10,000
Regrade	92,850	cy	\$557,099
Seed/Sod	556,687	sy	\$556,687
Direct Capital:			\$19,717,067

Engineering, Procurement & Construction Management: 2,366,048

Total Capital: \$22,100,000

WATER TREATMENT

Capital Items	Quantity	Units	Cost
Unit Purchase	2,991	gpm	\$2,561,265
Water Treatment (Includes Operator)	139,108,188	gal	\$55,643
Water Treatment QA	91	day	\$18,200
Piping	95,000	ft	\$6,365,000

Direct Capital: \$9,000,109
Engineering, Procurement & Construction Management: 1,080,013

Total Capital: \$10,100,000

SEDIMENT TREATMENT (VITRIFICATION 2x375 t Standalone Storage Units)

Capital Items		Quantity	Units	Cost
Sediment Treatment		249,140	ton	\$5,979,371
Soil Loading		249,140	ton	\$697,593
Soil Hauling		249,140	ton	\$291,961
	Direct Capital:			\$6,968,926
	Engineering, Procurement & Construct	ion Manageme	nt:	\$836,271
				

Total Capital: \$7,800,000

INSTITUTIONAL CONTROLS

Capital Items		Quantity	Units		Cost
Deed Restrictions		1	LS		\$5,000
	Direct Capital:				\$5,000
	1				
	Engineering, Procurement & Construct	tion Manageme	ent:		600
	Total Capital:				\$5,600
Present Worth	of Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring	(no action)		40	\$300,000	\$4,513,889
	(44 44444)			*********	
	Total Present Worth, Longer Term O&	M Coete			\$4,513,889
	Total Tresent Worth, Longer Term Occ	LIVI COSIS			\$4,515,667
	m. In				# # # # # # # # # # #
	Total Project Capital and O&M Cos	it			\$4,500,000
	TOTAL COST				\$61,900,000

ALTERNATIVE F: Cap Sediment to Maximum Extent Possible, Dredge and Off-site Disposal

CAPPING

		C.	APPING		
Capital Items		Quantity	Units		Cost
Mobilization/Site Prep		1	LS		\$200,000
Sand Purchase		254,407	tons		\$1,526,445
Sand Placement		181,720	cy		\$1,090,318
Cobble Purchase and Pl	acement	109,032	cy		\$3,270,953
Cap Placement QA		1	LS		\$100,000
	Direct Capital:				\$6,187,716
	Engineering, Procurement	742,526			
	Total Capital:				\$6,930,242
	f Longer Term Operating (Costs	Years	Annual Cost	
Monitoring/O&M Long-term Monitoring			40	\$400,000	\$6,018,519
Long-term O&M			40	\$138,605	\$2,085,489
	Total Present Worth, Longo	er Term O&M Costs			\$8,104,008
	Total Project Capital and	O&M Cost			\$15,000,000
	SEDI	MENT REMOVAL	(10-INCH C	UTTERHEAD)	

Capital Items	Quantity	Units	Cost
Site Preparation	1	Each	\$100,000
Mobilization - Equipment and Silt Curtain	1	LS	\$170,000
Debris Sweep	173	ac	\$2,768,000
Dredging - 12 hour shifts	48	Day	\$273,600
Dredge Monitoring (Water Quality)	48	Day	\$144,000
Sediment Removal QA	48	Day	\$57,600
Site Restoration	1	Each	\$600,000
Direct Capital:			\$4,113,200
Engineering, Procurement & C	Construction Managem	ent:	493,584
Contractor Overhead/Profit:			616,980
Total Capital:			\$5,200,000

SEDIMENT DEWATERING (GRAVITY)

					_
Capital Items Land Lease or Purchase		Quantity 636,049	Units sf		Cost \$1,144,889
Mobilization		1	LS		\$20,000
Clear and Grub		636,049	sf		\$29,203
Berm Construction		33,083	cy		\$198,496
Rough Grading Liner Placement		636,049 636,049	sf sf		\$159,012 \$954,074
Demob/Disposal		1	LS		\$10,000
Regrade		33,083	cy		\$198,496
Seed/Sod		70,672	sy		\$70,672
	Direct Capital:				\$2,784,842
	Engineering, Procurement & Constr	uction Manageme	ent:		334,181
	Total Capital:				\$3,100,000
	Total Capital:				\$3,100,000
		WATER TI	REATMENT		
Capital Items		Quantity	Units		Cost
Unit Purchase		389	gpm		\$684,675
Water Treatment (Inclu	des Operator)	37,444,306	gal		\$14,978
Water Treatment QA		67	Day		\$13,400
	Direct Capital:				\$713,053
	Engineering, Procurement & Constr	uction Manageme	ent:		85,566
	Total Capital:				\$800,000
SEDIMENT DISPOSAL (Ex	xisting NR 500 Commercial Disposal		OCAL (OFF	CLTE	
	SED	IMENT DISP	OSAL (OFF-	-SIIE)	
Capital Items		Quantity	Units		Cost
Solidification		67,063	ton		\$1,676,575
Lime Purchase		6,707	ton		\$402,420
Soil Loading		67,063	ton		\$187,776
Soil Hauling		67,063	ton		\$314,358
Tipping Fees (non-TSC	A)	67,063	ton		\$2,883,709
	Direct Capital:				\$5,464,838
	Engineering, Procurement & Constr	uction Manageme	ent:		655,781
	<i>g g</i> ,				
	Total Capital:				\$6,100,000
		DIOTETRICAL	NAL CONT	mor c	
		INSTITUTIO	JNAL CONT	KULS	
Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Constr	uction Manageme	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth o	f Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring (no action)		40	\$300,000	\$4,513,889
	Total Present Worth, Longer Term (O&M Costs			\$4,513,889
	Total Project Capital and O&M (Cost			\$4,500,000
	TOTAL COST				\$34,700,000

Table 7-10 Cost Summary for Remedial Alternatives - De Pere to Green Bay 125 ppb

Alternative	Dredge Volume (cy)	TSCA Volume (cy)	Hydraulic Dredging	Mechanical Dredging	Capping	Dewatering	Water Treatment	Thermal Treatment	CDF Construction	Off-site Disposal	Institutional Controls	Bayport Closure ¹	Subtotal	20% Contingency	TOTAL
Α	0	0									\$4,500,000		\$4,500,000	\$900,000	\$5,400,000
В	0	0									\$9,900,000		\$9,900,000	\$1,980,000	\$11,880,000
C1	6,868,500	240,778		\$100,500,000			\$700,000			\$659,200,000	\$4,500,000	\$4,200,000	\$769,100,000	\$153,820,000	\$922,920,000
C2A	6,868,500	240,778	\$109,400,000				\$7,700,000			\$70,200,000	\$4,500,000	\$4,200,000	\$196,000,000	\$39,200,000	\$235,200,000
C2B	6,868,500	240,778	\$109,400,000			\$19,900,000	\$7,300,000			\$419,200,000	\$4,500,000	\$4,200,000	\$564,500,000	\$112,900,000	\$677,400,000
С3	6,868,500	240,778	\$85,400,000			\$217,700,000	\$6,400,000			\$277,000,000	\$4,500,000	\$4,200,000	\$595,200,000	\$119,040,000	\$714,240,000
D	6,868,500	240,778		\$100,500,000			\$1,200,000		\$39,200,000	\$462,200,000	\$4,500,000	\$4,200,000	\$611,800,000	\$122,360,000	\$734,160,000
E	6,868,500	240,778	\$109,400,000			\$19,900,000	\$12,900,000	\$253,600,000			\$4,500,000	\$4,200,000	\$404,500,000	\$80,900,000	\$485,400,000
F	4,680,565	240,778		\$69,500,000	\$67,800,000		\$1,100,000		\$39,200,000	\$246,300,000	\$4,500,000	\$4,200,000	\$432,600,000	\$86,520,000	\$519,120,000

250 ppb

Alternative	Dredge Volume (cy)	TSCA Volume (cy)	Hydraulic Dredging	Mechanical Dredging	Capping	Dewatering	Water Treatment	Thermal Treatment	CDF Construction	Off-site Disposal	Institutional Controls	Bayport Closure ¹	Subtotal	20% Contingency	TOTAL
Α	0	0									\$4,500,000		\$4,500,000	\$900,000	\$5,400,000
В	0	0									\$9,900,000		\$9,900,000	\$1,980,000	\$11,880,000
C1	6,449,065	240,778		\$94,600,000			\$700,000			\$619,100,000	\$4,500,000	\$4,200,000	\$723,100,000	\$144,620,000	\$867,720,000
C2A	6,449,065	240,778	\$104,500,000				\$7,500,000			\$66,200,000	\$4,500,000	\$4,200,000	\$186,900,000	\$37,380,000	\$224,280,000
C2B	6,449,065	240,778	\$104,500,000			\$19,900,000	\$7,100,000			\$393,900,000	\$4,500,000	\$4,200,000	\$534,100,000	\$106,820,000	\$640,920,000
СЗ	6,449,065	240,778	\$81,500,000			\$204,400,000	\$6,200,000			\$260,200,000	\$4,500,000	\$4,200,000	\$561,000,000	\$112,200,000	\$673,200,000
D	6,449,065	240,778		\$94,600,000			\$1,100,000		\$39,200,000	\$422,800,000	\$4,500,000	\$4,200,000	\$566,400,000	\$113,280,000	\$679,680,000
E	6,449,065	240,778	\$104,500,000			\$19,900,000	\$12,800,000	\$238,100,000			\$4,500,000	\$4,200,000	\$384,000,000	\$76,800,000	\$460,800,000
F	4,433,446	240,778		\$66,000,000	\$66,200,000		\$1,100,000		\$39,200,000	\$222,700,000	\$4,500,000	\$4,200,000	\$403,900,000	\$80,780,000	\$484,680,000

500 ppb

Alternative	Dredge Volume (cy)	TSCA Volume (cy)	Hydraulic Dredging	Mechanical Dredging	Capping	Dewatering	Water Treatment	Thermal Treatment	CDF Construction	Off-site Disposal	Institutional Controls	Bayport Closure ¹	Subtotal	20% Contingency	TOTAL
Α	0	0					-				\$4,500,000		\$4,500,000	\$900,000	\$5,400,000
В	0	0									\$9,900,000		\$9,900,000	\$1,980,000	\$11,880,000
C1	6,169,458	240,778		\$90,600,000			\$600,000			\$592,400,000	\$4,500,000	\$4,200,000	\$692,300,000	\$138,460,000	\$830,760,000
C2A	6,169,458	240,778	\$100,900,000				\$7,300,000			\$63,500,000	\$4,500,000	\$4,200,000	\$180,400,000	\$36,080,000	\$216,480,000
C2B	6,169,458	240,778	\$100,900,000			\$19,900,000	\$7,000,000			\$377,000,000	\$4,500,000	\$4,200,000	\$513,500,000	\$102,700,000	\$616,200,000
С3	6,169,458	240,778	\$78,500,000			\$195,600,000	\$6,000,000			\$249,000,000	\$4,500,000	\$4,200,000	\$537,800,000	\$107,560,000	\$645,360,000
D	6,169,458	240,778		\$90,600,000			\$1,100,000		\$39,200,000	\$396,600,000	\$4,500,000	\$4,200,000	\$536,200,000	\$107,240,000	\$643,440,000
E	6,169,458	240,778	\$100,900,000			\$19,900,000	\$12,700,000	\$227,800,000			\$4,500,000	\$4,200,000	\$370,000,000	\$74,000,000	\$444,000,000
F	4,242,710	240,778		\$63,300,000	\$65,100,000		\$1,100,000		\$39,200,000	\$204,500,000	\$4,500,000	\$4,200,000	\$381,900,000	\$76,380,000	\$458,280,000

1000 ppb

Alternative	Dredge Volume (cy)	TSCA Volume (cy)	Hydraulic Dredging	Mechanical Dredging	Capping	Dewatering	Water Treatment	Thermal Treatment	CDF Construction	Off-site Disposal	Institutional Controls	Bayport Closure ¹	Subtotal	20% Contingency	TOTAL
Α	0	0			-	-	-				\$4,500,000	-	\$4,500,000	\$900,000	\$5,400,000
В	0	0									\$9,900,000		\$9,900,000	\$1,980,000	\$11,880,000
C1	5,879,529	240,778		\$86,500,000			\$600,000			\$564,800,000	\$4,500,000	\$4,200,000	\$660,600,000	\$132,120,000	\$792,720,000
C2A	5,879,529	240,778	\$96,900,000				\$7,200,000			\$60,700,000	\$4,500,000	\$4,200,000	\$173,500,000	\$34,700,000	\$208,200,000
C2B	5,879,529	240,778	\$96,900,000			\$19,900,000	\$6,900,000			\$359,400,000	\$4,500,000	\$4,200,000	\$491,800,000	\$98,360,000	\$590,160,000
C3	5,879,529	240,778	\$75,100,000			\$186,400,000	\$5,900,000			\$237,400,000	\$4,500,000	\$4,200,000	\$513,500,000	\$102,700,000	\$616,200,000
D	5,879,529	240,778		\$86,500,000			\$1,100,000		\$39,200,000	\$369,600,000	\$4,500,000	\$4,200,000	\$505,100,000	\$101,020,000	\$606,120,000
E	5,879,529	240,778	\$96,900,000			\$19,900,000	\$12,500,000	\$217,100,000			\$4,500,000	\$4,200,000	\$355,100,000	\$71,020,000	\$426,120,000
F	4,046,276	240,778		\$60,500,000	\$61,900,000		\$1,100,000		\$39,200,000	\$185,700,000	\$4,500,000	\$4,200,000	\$357,100,000	\$71,420,000	\$428,520,000

5000 ppb

Alternative	Dredge	TSCA Volume (cy)	Hydraulic Dredging	Mechanical Dredging	Capping	Dewatering	Water Treatment	Thermal Treatment	CDF Construction	Off-site Disposal	Institutional Controls	Bayport Closure ¹	Subtotal	20% Contingency	TOTAL
Α	0	0									\$4,500,000		\$4,500,000	\$900,000	\$5,400,000
В	0	0									\$9,900,000		\$9,900,000	\$1,980,000	\$11,880,000
C1	4,517,391	240,778		\$67,200,000			\$500,000			\$434,700,000	\$4,500,000	\$4,200,000	\$511,100,000	\$102,220,000	\$613,320,000
C2A	4,517,391	240,778	\$76,000,000				\$6,500,000			\$47,500,000	\$4,500,000	\$4,200,000	\$138,700,000	\$27,740,000	\$166,440,000
C2B	4,517,391	240,778	\$76,000,000			\$19,900,000	\$6,300,000			\$277,100,000	\$4,500,000	\$4,200,000	\$388,000,000	\$77,600,000	\$465,600,000
С3	4,517,391	240,778	\$57,200,000			\$143,200,000	\$5,200,000			\$182,900,000	\$4,500,000	\$4,200,000	\$397,200,000	\$79,440,000	\$476,640,000
D	4,517,391	240,778		\$67,200,000			\$1,000,000		\$39,200,000	\$244,600,000	\$4,500,000	\$4,200,000	\$360,700,000	\$72,140,000	\$432,840,000
E	4,517,391	240,778	\$76,000,000			\$19,900,000	\$11,900,000	\$166,800,000			\$4,500,000	\$4,200,000	\$283,300,000	\$56,660,000	\$339,960,000
F	3,102,041	240,778		\$47,100,000	\$42,900,000		\$1,000,000		\$39,200,000	\$95,500,000	\$4,500,000	\$4,200,000	\$234,400,000	\$46,880,000	\$281,280,000

 $^{^{1}\}mbox{Bayport closure costs}$ are present value costs based on closure 40 years from the present.

BASIS FOR PRELIMINARY COST ESTIMATES

SEDIMENT REMEDIATION FOX RIVER, WISCONSIN

DE PERE TO GREEN BAY

Action Level - 125 ppb

Matarial Handling Assumptions						
Material Handling Assumptions: Volume > 125 ppb	6,868,500	CV	1130 ac	5,243,130) m3	Acres corresponds to dredge
Volume > 250 ppb	6,449,065		1150 ac	4,922,950		footprint area
Volume > 500 ppb	6,169,458			4,709,510		rootprint area
Volume > 1,000 ppb	5,879,529			4,488,190		
Volume > 5000 ppb	4,517,391			3,448,390		
Volume > 50,000 ppb	240,778			183,800		
Solids Specific Gravity	2.36					
Fresh Water Density	62.4	lb/ft3				
In Situ Density	33.8%		7.8% v/v		tons per cy	
Slurry Density (20% in situ)			3.6% v/v		tons per cy	Ogden Beeman
Dewatered Density (settling pond)			5.4% v/v		tons per cy	Montgomery Watson
Dewatered Density (Hydraulic Dredging and CDF)	50.0%		9.8% v/v		tons per cy	Foth & VanDyke
Dewatered Density (Mechanical Dredging)	33.8%		7.8% v/v		tons per cy	
Treated Density	93.4%		0.0% v/v		tons per cy	
CDF Capacity	2,136,771			974,80		
HTTD Treatment Capacity Cap Volume	1,577,177 2,187,936		u	1,650,000 1,670,180		
Vitrification Treatment Capacity	9,106,166		11	6440000.00		
Viament Capacity	7,100,100	cy misic	u	01-10000.00	tons	
Cost Estimating Parameters & Methodology:						
Interest Rate	6.0%					XX . XX . 1
Sales Tax	5.5%					Not Used
Engineering, Procurement and Construction Mgmt	12.0%					
Contractor Overhead and Profit - Dredging Only	15.0%					
Dredging Dredge Manitaring (Water Quality)	62.000	nor de				
Dredge Monitoring (Water Quality) Sediment Removal QA		per day per day				
Debris Sweep		per day per acre				Ogden Beeman
Hydraulic - 2 12-inch Cutterheads	\$10,000	per acre				Ogden Beeman
Site Preparation	\$803,400	LS				Ogden Beeman
Mobilization - Equipment	\$1,135,000					Ogden Beeman
Mobilization - Silt Curtain	\$35,000	20				Ogden Beeman
Shift Rate (12 hours)		per shift				Ogden Beeman
Dredge Rate			r 12 hour shift			Ogden Beeman
Winter Over Equipment	\$285,000					Ogden Beeman
Site Restoration	\$600,000	per dredge l	aunch site			
Length of Piping	95,000	ft		18	mi	Distance to Town of Holland (map
						provided by Fred Swed). 11 mi of
						hard piping plus 7 mi of floating
	A					pipe
Piping Purchase/Installation		per ft				Ogden Beeman
Number of Road Crossings		each .				pj, review map
Cost per Road Crossing		per crossing				pj, review map
Number of Booster Pumps Booster Pump Cost		each per day				Ogden Beeman Ogden Beeman
Mechanical - 8 cy bucket	\$2,300	per day				Ogden Beeman
Dock Construction	\$400,000	LS				pj
Mobilization - Equipment		per dredge				Ogden Beeman
Mobilization - Silt Curtain	\$35,000	1 0				Ogden Beeman
Mobilization - Watertight Barge	\$100,000					Ogden Beeman - JAG estimate
Shift Rate (10 hours)	\$17,000	per shift				Ogden Beeman
Dredge Rate	1900	cy in situ pe	r 10 hour shift			Ogden Beeman
Offload Stockpile Area Prep.		per area				pj
Free Water per cy Dredged (10%)		gal				Ogden Beeman
Offload Crane Mobilization	\$50,000					pj
Site Restoration	\$500,000	LS				рj
High Temperature Thermal Desorption						
Setup Staging Area	\$50,000					pj
Mobilization/Site Prep	\$150,000					Maxymillian
Sediment Treatment QA Ratio of Amending Sand Volume to Dredge Vol.		per ton				
Sand Purchase and Deliver	0.25	per ton				Ole
Blending		per ton				Ole
HTTD (includes off-gas treatment)		per ton				Maxymillian
Stack Testing	\$50,000					Maxymillian
Place Treated Material		per ton				
Vitrification	Ψ	r				
Capital Costs	\$36,000,000	LS				Unit Cost Study- Minergy
Operating Costs	\$6,800,000					Unit Cost Study- Minergy
Vitrification (Unit Cost includes Cap and Oper Costs)		per ton				Unit Cost Study- Minergy
		_				

Capping Capping	#200,000				0.1. P
Mobilization/Site Prep Area	\$200,000 21,055,849	of	1,956,200	m2	Ogden Beeman
Sand Cap Depth		feet	1,730,200	IIIZ	
Sand Purchase		per ton			Ole
Placement Rate	\$6	per cy			Ogden Beeman
Sand Density		tons per cy			
Armored Cap Depth		feet			Maria
Cobbles Sand Density		per cy tons per cy			Means
Cap Placement QA	\$100,000				Ogden Beeman
Long-term O&M		of capital			pj
Long-term Monitoring	\$400,000				Anne LTM
Nearshore CDF			Bayport		
Land Lease or Purchase	\$1.80	per sf			Baird
Length	9,600				Baird
Capping Volume	205,000	-	2,178,000		Baird
Seeding Area	300,000	-	2,178,000		Baird
Sheetpile Wall Length	9,600				based on bathymetry
Sheetpile Depth	30				pj B
Sheetpile Cost		per sf			Baird
Shot Rock Berm Rip Rap		per lf per lf			Baird
Clean Soil Cap		per cy			pj Baird
Seeding		per sy			Baird
Mitigation		per acre			Tim
		per year			Tim
Long-term Monitoring	\$650,000				Anne LTM
Long-term O&M		of capital			pj
•		•			••
Solidification					
Percent Lime	10.0%	(w/w)			Montgomery Watson
Lime	\$60	per ton	Mixing	\$25 per ton	pj, pug mill mixing
Dewatering - Mechanical					
Mobilization	\$100,000				pj GLI I B
Holding Pond-Centrifuge	\$80	per bone dry ton			Global Dewatering
Dewatering - Upland Pond (2 cells)					
Land Lease or Purchase	\$1.80	per sf			Ole
Area	4,491,228		103.10		2 days slurry + 13 wk solids * 2
	1,171,220	<i>51</i>	103.10		cells * 2 shifts per day
Perimeter	8,477	1f	2119.251741		assume square
Depth of Material in Dewatering Cell	8	feet			based on size at Arrowhead Park
Cell Retention Time	24	hours			Not Used
Cell Depth	10	feet			
Mobilization	\$20,000	LS			
Clear and Grub		per acre			pj
Berm Volume		cy per lf			2:1 slope, 8-foot top
Berm Construction		per cy			рj
Rough Grading		per sf			pj
Alphalt Liner		per sf			pj, 2 2-inch lifts
Demob/Disposal	\$10,000				pj :
Regrade Berm Soils		per cy			pj Baird
Seed/Sod	\$1	per sy			Baird
Water Treatment					
Flow Rate (3 Mechanical Dredges)	57	gpm			assume operate 24/7
Unit, Purchase (3 Mechanical Dredges)	\$216,590				рј
Flow Rate (3 Mechanical Dredges to CDF)		gpm			assume operate 24/7
Unit, Purchase (3 Mechanical Dredges to CDF)	\$570,498				pj
Flow Rate (2 Hydraulic Dredges)	3,563				assume operate 24/7
Unit, Purchase (Hydraulic Dredge)	\$2,586,470				pj
Flow Rate (2 Hydraulic Dredges; settling pond)	3,110				assume operate 24/7
Flow Rate (mechanical dewatering)	3,563				
Unit, Purchase (mechanical dewatering)	\$2,586,470				
Water Treatment (Including Operator)		per 1,000 gallons			рj
Water Treatment QA		per day			pj, 1 sample/day
Length of piping for treated water discharge	20,000	feet			Distance from town of Holland to
Disposal					river per map provided by Fred Swed
Existing NR 500 Commercial Disposal Facility					Sweu
Load Soil for Hauling	\$2.80	per ton			pj
Round-trip Hauling		hours			рj pj
Round-trip Hauling (to Vitrification Facility)		hours			pj
Tipping Fee (non-TSCA)		per ton			St. Paul
Tipping Fee (TSCA)		per ton			St. Paul
Truck Rate	\$75	per hour			pj
Truck Load		tons			pj
Conveyer System Construction	1,000,000	LS			рj
New Landfill Disposal (Dedicated NR 500 Monofill)	*******				
Landfill Construction	\$25,988,920				
Local Siting Fee		per cy			
Closure Cap	\$100,000				
Operating Cost	\$500,000				
Post-closure Monitoring	\$30,000	per year			

Institutional Controls		
Public Education Program	\$100,000	рj
O&M Plans	\$20,000	рj
Deed Restrictions	\$5,000	pj
Annual Costs		
Public Education Program	\$30,000	pj
Maintaining O&M Plans	\$800	pj
Reporting	\$20,000	pj
Long-term Monitoring	\$600,000	Anne LTM
Long-term Monitoring (no action)	\$300,000	Anne LTM

ALTERNATIVE A: No Action

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Constru	ction Manageme	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth Long-term Monitoring	of Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term O	&M Costs			\$4,513,889
	Total Project Capital and O&M Co	ost			\$4,500,000
	TOTAL COST				\$4,500,000

ALTERNATIVE B: Monitored Natural Recovery

MONITORING/INSTITUTIONAL CONTROLS

Capital Items		Quantity	Units		Cost
Public Education Program	m	1	LS		\$100,000
O&M Plans		1	LS		\$20,000
Deed Restrictions		1	LS		\$5,000
	Direct Capital:				\$125,000
	Engineering, Procurement & Constru	ction Managem	ent:		15,000
	Total Capital:				\$140,000
Present Worth of	Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring			40	\$600,000	\$9,027,778
Public Education Program	m		40	\$30,000	\$451,389
Maintaining O&M Plans			40	\$800	\$12,037
Reporting			40	\$20,000	\$300,926
	Total Present Worth, Longer Term O	&M Costs			\$9,792,130
	Total Project Capital and O&M C	ost			\$9,900,000
	TOTAL COST				\$9,900,000

ALTERNATIVE C1: Dredge Sediment With Disposal at Existing NR 500 Commercial Disposal Facility (Passive Dewatering)

SEDIMENT REMOVAL (MECHANICAL DREDGING)

Capital Items	Quantity	Units		Cost
Mobilization - Equipment and Silt Curtain	3	LS		\$1,470,000
Watertight Barges	4	ea		\$400,000
Offload Stockpile Area Prep.	1	LS		\$75,000
Dredging - 12 hour shifts	3,615	Day	27.80769231	\$61,455,000
Dredge Monitoring (Water Quality)	3,615	Day		\$10,845,000
Sediment Removal QA	3,615	Day		\$4,338,000
Offload Crane Mobilization	1	LS		\$50,000
Site Restoration	1	ea		\$500,000
Direct Capital:				\$79,133,000
Engineering, Procurement & C	Construction Managem	ent:		9,495,960
Contractor Overhead/Profit:				11,869,950
Total Capital:				\$100,500,000

WATER TREATMENT

Capital Items		Quantity	Units		Cost
Unit Purchase	1.0.4)	57	gpm		\$216,590
Water Treatment (Inclu Water Treatment QA	ides Operator)	138,716,232 1,687	gal day		\$55,486 \$337,400
water Treatment QA		1,007	day		\$357,700
	Direct Capital:				\$609,476
	Engineering, Procurement & Const	ruction Manageme	ent:		73,137
	Engineering, Froeurement & Const	raction manageme	Jiit.		75,157
	Total Capital:				\$700,000
	SEDIMENT DISPOSAL	L (Existing NR	500 Commo	ercial Disposal Facility)	
Capital Items		Quantity	Units		Cost
Solidification		7,185,641	ton		\$179,641,037
Lime Purchase		718,565	ton		\$43,113,900
Soil Loading		7,185,641	ton		\$20,119,796
Soil Hauling		7,185,641	ton		\$33,682,694
Tipping Fees (non-TSC	CA)	6,933,746	ton		\$298,151,076
Tipping Fees (TSCA))	251,896	ton		\$13,854,253
1.pping 1 000 (150:1)		251,050	1011		\$13,00 i, 2 03
	Direct Capital:				\$588,562,756
	Engineering, Procurement & Const	ruction Manageme	ent:		70,627,531
	5 5,				
	Total Capital:				\$659,200,000
	I	NSTITUTION	IAL CONTE	ROLS	
Capital Items		Quantity	Units		Cost
Deed Restrictions		1	LS		\$5,000
	Direct Capital:				\$5,000
	Engineering, Procurement & Const	ruction Manageme	ent:		600
	T - 10 to 1				07.000
	Total Capital:				\$5,600
Present Worth	of Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring	(no action)		40	\$300,000	\$4,513,889
	Total Present Worth, Longer Term	O&M Costs			\$4,513,889
	Total Fresent Worth, Longer Term	O&W COSIS			\$4,515,669
	Total Project Capital and O&M	Cost			\$4,500,000
		BAYPORT (CLOSURE		
Capital Items		Quantity	Units		Cost
Clean Soil Cap		2,178,000	cy		\$21,780,000
Seeding		2,178,000	sy		\$2,178,000
Mitigation		450	acre		\$4,500,000
	Present Worth of Direct Capital:				\$2,766,749
	Engineering, Procurement & Const	ruction Manageme	ent:		\$332,010
	Total Capital:				\$3,098,759
	•				22,
	of Longer Term Operating Costs		Years	Annual Cost	¢14.620
Mitigation Long-term Monitoring			40 40	972 63,194	\$14,628 \$950,842
Long-term O&M			40	6,025	\$90,659
	Total Present Worth, Longer Term	O&M Costs			\$1,056,130
	Total Project Capital and O&M	Cost			\$4,200,000
		••			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
	TOTAL COOT				
	TOTAL COST				\$769,100,000

ALTERNATIVE C2A: Dredge Sediment with Combined Dewatering and Disposal Facility

SEDIMENT REMOVAL (2 12-INCH CUTTERHEADS)

	SEDIMENT I	REMOVAL (2 1	2-INCH CU	TTERHEADS)	
Capital Items		Quantity	Units		Cost
Site Preparation		2	LS		\$1,606,800
Mobilization - Equipm	nent and Silt Curtain	1	LS		\$1,170,000
Debris Sweep		1130	acre		\$18,080,000
Dredging - 2 12 hour s		1191	Day	6.543956044	\$33,824,400
Dredge Monitoring (V		1191	Day		\$7,146,000
Sediment Removal QA	A	1191	Day		\$2,858,400
Piping		95,000 12	ft		\$6,365,000
Road Crossings Booster Pumps		4	ea ea		\$600,000 \$11,910,000
Winter Over All Equip	oment	7	yr		\$1,995,000
Site Restoration		1	LS		\$600,000
	Direct Capital:				\$86,155,600
	Engineering, Procurement & Cor	struction Managem	ent:		10,338,672
	Contractor Overhead/Profit:				12,923,340
	Total Capital:				\$109,400,000
		WATER TR	EATMENT		
Capital Items		Quantity	Units		Cost
Unit Purchase	F 0 ()	3,563	gpm		\$2,586,470
Water Treatment (Incl Water Treatment QA	uding Operator)	6,106,807,801 1,191	gal Day		\$2,442,723 \$476,400
Piping Piping		20,000	ft		\$1,340,000
Tiping		20,000	11		\$1,540,000
	Direct Capital:				\$6,845,593
		atmistion Managam	amt:		
	Engineering, Procurement & Cor	istruction Managem	ent.		821,471
	Total Capital:				\$7,700,000
	SEDIMENT	DISPOSAL (De	edicated NR	500 Monofill)	
Capital Items		Quantity	Units		Cost
=		Quantity 1			
Landfill Construction			LS		\$25,988,920
Local Siting Fee		4,104,792	cy		\$20,523,960
Closure		127	acres		\$12,721,463
	Direct Conitals				050 224 242
	Direct Capital:				\$59,234,343
	Engineering, Procurement & Cor	struction Managem	ent:		7,108,121
	Total Capital:				\$66,300,000
Present Worth	of Longer Term Operating Costs		Years	Annual Cost	
Operations	ar manger areas a paramag a com-		10	\$500,000	\$3,680,044
Post Closure Monitori	ng		40	\$30,000	\$252,053
	Total Present Worth, Longer Ter	m O&M Costs			\$3,932,097
	Total Project Capital and O&M				\$70,200,000
		INSTITUTION	NAL CONTI	ROLS	
Capital Items		Quantity	Units		Cost
Deed Restrictions		1	LS		\$5,000
	Direct Capital: Engineering, Procurement & Cor	nstruction Managem	ent:		\$5,000 600
	Total Capital:				\$5,600
	of Longer Term Operating Costs		Years	Annual Cost	67.510.000
Long-term Monitoring	g (no action)		40	\$300,000	\$4,513,889
	Total Present Worth, Longer Ter	m O&M Costs			\$4,513,889

Total Project Capital and O&M Cost

\$4,500,000

BAYPORT CLOSURE

Capital Items Clean Soil Cap Seeding Mitigation		Quantity 2,178,000 2,178,000 450	Units cy sy acre		Cost \$21,780,000 \$2,178,000 \$4,500,000
	Present Worth of Direct Capital: Engineering, Procurement & Constru	ction Manageme	ent:		\$2,766,749 \$332,010
	Total Capital:				\$3,098,759
Present Worth of Mitigation Long-term Monitoring Long-term O&M	of Longer Term Operating Costs		Years 40 40 40	Annual Cost 972 63,194 6,025	\$14,628 \$950,842 \$90,659
	Total Present Worth, Longer Term O	&M Costs			\$1,056,130
	Total Project Capital and O&M Co	ost			\$4,200,000
	TOTAL COST				\$192,100,000

ALTERNATIVE C2B: Dredge Sediment with Separate Dewatering and Disposal Facilities

Total Capital:

SEDIMENT REMOVAL (2 12-INCH CUTTERHEADS)

Capital Items	Quantity	Units		Cost
Site Preparation	2	LS		\$1,606,800
Mobilization - Equipment and Silt Curtain	1	LS		\$1,170,000
Debris Sweep	1130	acre		\$18,080,000
Dredging - 2 12 hour shifts/day	1191	Day	6.543956044	\$33,824,400
Dredge Monitoring (Water Quality)	1191	Day		\$7,146,000
Sediment Removal QA	1191	Day		\$2,858,400
Piping	95,000	ft		\$6,365,000
Road Crossings	12	ea		\$600,000
Booster Pumps	4	ea		\$11,910,000
Winter Over All Equipment	7	yr		\$1,995,000
Site Restoration	1	LS		\$600,000
Direct Capital:				\$86,155,600
Engineering, Procurement & C	onstruction Managem	ent:		10,338,672
Contractor Overhead/Profit:				12,923,340

\$109,400,000

SEDIMENT DEWATERING (GRAVITY - NR 213)

Capital Items	Quantity	Units	Cost
Land Lease or Purchase	4,491,228	sf	\$8,084,210
Mobilization	1	LS	\$20,000
Clear and Grub	4,491,228	sf	\$206,209
Berm Construction	87,910	cy	\$527,458
Rough Grading	4,491,228	sf	\$1,122,807
Liner Placement	4,491,228	sf	\$6,736,842
Demob/Disposal	1	LS	\$10,000
Regrade	87,910	cy	\$527,458
Seed/Sod	499,025	sy	\$499,025
Direct Cap	ital:		\$17,734,010
Engineerin	g, Procurement & Construction Managem	ent:	2,128,081
Total Cap	ital:		\$19,900,000

WATER TREATMENT

Capital Items	Quantity	Units	Cost
Unit Purchase	3,110	gpm	\$2,586,470
Water Treatment (Including Operator)	5,330,439,162	gal	\$2,132,176
Water Treatment QA	1,191	Day	\$476,400
Piping	20,000	ft	\$1,340,000
Direct Capital:			\$6,535,045
Engineering, Procurement	nt & Construction Manageme	nt:	784,205
Total Capital:			\$7,300,000

SEDIMENT DISPOSAL (Dedicated NR 500 Monofill)

Capital Items	Quanti	ty Units		Cost
Solidification	8,095,82	23 ton		\$202,395,568
Lime Purchase	809,583	3 ton		\$48,574,980
Sediment Loading	8,095,82	23 ton		\$22,668,304
Sediment Hauling	8,095,82	23 ton		\$37,949,169
Landfill Construction	1	LS		\$25,988,920
Local Siting Fee	4,104,79	02 cy		\$20,523,960
Closure	127	acres		\$12,721,463
	Direct Capital:			\$370,822,364
	Engineering, Procurement & Construction Man-	agement:		44,498,684
	Total Capital:			\$415,300,000
	of Longer Term Operating Costs	Years	Annual Cost	
Operations Post Closure Monitoria	na	10 40	\$500,000 \$30,000	\$3,680,044
Fost Closure Monitori			\$30,000	\$252,053
	Total Present Worth, Longer Term O&M Costs			\$3,932,097
	Total Project Capital and O&M Cost			\$419,200,000
	INSTITUTIO	ONAL CONTRO	OLS	
Capital Items	Quanti	ty Units		Cost
Deed Restrictions	1	LS		\$5,000
	Direct Capital:			\$5,000
	Engineering, Procurement & Construction Man	agement:		600
	Total Capital:			\$5,600
	of Longer Term Operating Costs	Years	Annual Cost	
Long-term Monitoring	g (no action)	40	\$300,000	\$4,513,889
	Total Present Worth, Longer Term O&M Costs			\$4,513,889
	Total Project Capital and O&M Cost			\$4,500,000
	ВАУРО	RT CLOSURE		
Capital Items	Quanti	ty Units		Cost
Clean Soil Cap	2,178,00			\$21,780,000
Seeding Mitigation	2,178,00 450			\$2,178,000 \$4,500,000
Witigation	Present Worth of Direct Capital:	acre		\$2,766,749
	Engineering, Procurement & Construction Man-	agement:		\$332,010
	Total Capital:			\$3,098,759
	of Longer Term Operating Costs	Years	Annual Cost	***
Mitigation Long-term Monitoring	,	40 40	972 63,194	\$14,628 \$950,842
Long-term O&M	,	40	6,025	\$90,659
	Total Present Worth, Longer Term O&M Costs			\$1,056,130
	Total Project Capital and O&M Cost			\$4,200,000
	TOTAL COST			\$564,500,000

ALTERNATIVE C3: Dredge Sediment With Disposal at Existing NR 500 Commercial Disposal Facility (Mechanical Dewatering)

SEDIMENT REMOVAL (2 - 12-inch CUTTERHEADS)

Capital Items	Quantity	Units		Cost
Site Preparation	2	LS		\$1,606,800
Mobilization - Equipment and Silt Curtain	1	LS		\$1,170,000
Debris Sweep	1130	acre		\$18,080,000
Dredging - 2 12 hour shifts/day	1191	Day	6.543956044	\$33,824,400
Dredge Monitoring (Water Quality)	1191	Day		\$7,146,000
Sediment Removal QA	1191	Day		\$2,858,400
Winter Over All Equipment	7	yr		\$1,995,000
Site Restoration	1	LS		\$600,000
Direct Capital:				\$67,280,600
Engineering, Procurement & C	onstruction Managem	ent:		8,073,672
Contractor Overhead/Profit:				10,092,090
Total Capital:				\$85,400,000

SEDIMENT DEWATERING (MECHANICAL)

Capital Items	Quantity	Units	Cost
Mobilization/Site Prep	1	LS	\$100,000
Dewatering	2,428,747	bdt	\$194,299,745
	P		\$104.200.745
	Direct Capital:		\$194,399,745
	Engineering, Procurement & Construction Managem	ent:	23,327,969
	Total Capital:		\$217,700,000

WATER TREATMENT

Capital Items		Quantity	Units	Cost
Unit Purchase		3,563	gpm	\$2,586,470
Water Treatment (Include	s Operator)	6,106,807,801	gal	\$2,442,723
Water Treatment QA		3,334	day	\$666,800
	Direct Capital: Engineering, Procuremen	nt & Construction Manageme	nt:	\$5,695,993 683,519

SEDIMENT DISPOSAL (Existing NR 500 Commercial Disposal Facility)

Total Capital:

Capital Items	Quantity	Units	Cost
Soil Loading	4,857,494	ton	\$13,600,982
Soil Hauling	4,857,494	ton	\$22,769,501
Tipping Fees (non-TSCA)	4,687,212	ton	\$201,550,127
Tipping Fees (TSCA)	170,281	ton	\$9,365,475
Direct Capital:			\$247,286,086
Engineering, Procurement &	& Construction Managem	ent:	29,674,330
Total Capital:			\$277,000,000

INSTITUTIONAL CONTROLS

Units

Quantity

Deed Restrictions	1	LS		\$5,000
Direct Capital: Engineering, Procuremen	nt & Construction Manag	gement:		\$5,000 600
Total Capital:				\$5,600
Present Worth of Longer Term Operating Long-term Monitoring (no action)	; Costs	Years 40	Annual Cost \$300,000	\$4,513,889
Total Present Worth, Lor	iger Term O&M Costs			\$4,513,889
Total Project Capital a	nd O&M Cost			\$4,500,000

Capital Items

\$6,400,000

Cost

BAYPORT CLOSURE

Capital Items Clean Soil Cap Seeding Mitigation		Quantity 2,178,000 2,178,000 450	Units cy sy acre		Cost \$21,780,000 \$2,178,000 \$4,500,000
	Present Worth of Direct Capital: Engineering, Procurement & Constru	ction Manageme	ent:		\$2,766,749 \$332,010
	Total Capital:				\$3,098,759
Present Worth of Mitigation Long-term Monitoring Long-term O&M	f Longer Term Operating Costs		Years 40 40 40	Annual Cost 972 63,194 6,025	\$14,628 \$950,842 \$90,659
	Total Present Worth, Longer Term O	&M Costs			\$1,056,130
	Total Project Capital and O&M Co	ost			\$4,200,000
ALTERNATIVE D: I	TOTAL COST Oredge Sediment, CDF and Off	-site Disposa	ı		\$595,200,000

SEDIMENT REMOVAL (MECHANICAL DREDGING)

Capital Items	Quantity	Units	Cost
Mobilization - Equipment and Silt Curtain	3	LS	\$1,470,000
Watertight Barges	4	ea	\$400,000
Offload Stockpile Area Prep.	1	LS	\$75,000
Dredging - 12 hour shifts	3,615	Day	\$61,455,000
Dredge Monitoring (Water Quality)	3,615	Day	\$10,845,000
Sediment Removal QA	3,615	Day	\$4,338,000
Offload Crane Mobilization	1	LS	\$50,000
Site Restoration	1	ea	\$500,000
Direct Capital:			\$79,133,000
Engineering, Procurement & C	Construction Managem	ent:	9,495,960
Contractor Overhead/Profit:			11,869,950
Total Capital:			\$100,500,000

CDF CONSTRUCTION

Capital Items		Quantity	Units		Cost
Land Lease or Purchas	e	2,700,000	sf		\$4,860,000
Shot Rock/Rip Rap		9,600	lf		\$6,816,000
Sheetpile Placement		288,000	sf		\$5,472,000
Clean Soil Cap		205,000	cy		\$2,050,000
Seeding		300,000	sy		\$300,000
Mitigation		62	acre		\$619,835
	Direct Capital:				\$20,117,835
	Engineering, Procurement & Cons	truction Managem	ent:		\$2,414,140
	Total Capital:				\$22,531,975
Present Worth	of Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	10,000	\$150,463
Long-term Monitoring			40	650,000	\$9,780,093
Long-term O&M			40	450,639	\$6,780,456
	Total Present Worth, Longer Term	O&M Costs			\$16,711,012
	Total Project Capital and O&M	Cost			\$39,200,000

WATER TREATMENT

Capital Items	Quantity	Units	Cost
Unit Purchase	287	gpm	\$570,498
Water Treatment (Includes Operator)	312,357,784	gal	\$124,943
Water Treatment QA	1,687	day	\$337,400
Direct Capital:			\$1,032,841
Engineering, Procurement & Construction Management:			123,941
Total Capital:			\$1,200,000

SEDIMENT DISPOSAL (Existing NR 500 Commercial Disposal Facility)

Capital Items		Quantity	Units	Cost
Solidification		4,950,209	ton	\$123,755,225
Lime Purchase		495,021	ton	\$29,701,260
Soil Loading		4,950,209	ton	\$13,860,585
Soil Hauling		4,950,209	ton	\$23,204,105
Tipping Fees (non-TSCA))	4,698,313	ton	\$202,027,479
Tipping Fees (TSCA)		365,647	ton	\$20,110,606
1	Direct Capital:			\$412,659,260
1	Engineering, Procurement & Constru	ction Manageme	ent:	49,519,111
5	Total Capital:			\$462,200,000

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Construc	tion Manageme	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth of Long-term Monitoring	of Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term O&	&M Costs			\$4,513,889
	Total Project Capital and O&M Co	st			\$4,500,000

BAYPORT CLOSURE

Capital Items Clean Soil Cap Seeding Mitigation	Qua 2,178 2,178 45	8,000 8,000	Units cy sy acre		Cost \$21,780,000 \$2,178,000 \$4,500,000
Minganon	Present Worth of Direct Capital: Engineering, Procurement & Construction M		acre		\$2,766,749 \$332,010
	Total Capital:				\$3,098,759
Present Worth of Mitigation Long-term Monitoring Long-term O&M	of Longer Term Operating Costs	,	Years 40 40 40	Annual Cost 972 63,194 6,025	\$14,628 \$950,842 \$90,659
	Total Present Worth, Longer Term O&M Co	osts			\$1,056,130
	Total Project Capital and O&M Cost				\$4,200,000

ALTERNATIVE E: Dredge Sediment and Thermal Treatment

Total Capital:

TOTAL COST

SEDIMENT REMOVAL (2 - 12-inch CUTTERHEAD'S)

Capital Items	Quantity	Units		Cost
Site Preparation	2	LS		\$1,606,800
Mobilization - Equipment and Silt Curtain	1	LS		\$1,170,000
Debris Sweep	1130	acre		\$18,080,000
Dredging - 2 12 hour shifts/day	1191	Day	6.543956044	\$33,824,400
Dredge Monitoring (Water Quality)	1191	Day		\$7,146,000
Sediment Removal QA	1191	Day		\$2,858,400
Piping	95,000	ft		\$6,365,000
Road Crossings	12	ea		\$600,000
Booster Pumps	4	ea		\$11,910,000
Winter Over All Equipment	7	yr		\$1,995,000
Site Restoration	1	LS		\$600,000
Direct Capital:				\$86,155,600
Engineering, Procurement &	Construction Managem	ent:		10,338,672
Contractor Overhead/Profit:				12,923,340

\$611,800,000

\$109,400,000

SEDIMENT DEWATERING (GRAVITY)

Capital Items Land Lease or Purchas Mobilization Clear and Grub Berm Construction Rough Grading	e	Quantity 4,491,228 1 4,491,228 87,910 4,491,228	Units sf LS sf cy sf		Cost \$8,084,210 \$20,000 \$206,209 \$527,458 \$1,122,807
Liner Placement Demob/Disposal Regrade Seed/Sod		4,491,228 1 87,910 499,025	sf LS cy sy		\$6,736,842 \$10,000 \$527,458 \$499,025
	Direct Capital: Engineering, Procurement & Const	ruction Manageme	ent:		\$17,734,010 2,128,081
	Total Capital:				\$19,900,000
		WATER TRE	CATMENT		
Capital Items Unit Purchase Water Treatment (Inclu Water Treatment QA Piping	iding Operator)	Quantity 3,110 5,330,439,162 1,191 95,000	Units gpm gal Day ft		Cost \$2,586,470 \$2,132,176 \$476,400 \$6,365,000
	Direct Capital: Engineering, Procurement & Const	ruction Manageme	ent:		\$11,560,045 1,387,205
	Total Capital: SEDIMENT TREATMENT	(VITRIFICAT	ΓΙΟΝ 2x375	t Standalone Storage Units)	\$12,900,000
Capital Items Sediment Treatment Soil Loading Soil Hauling	Direct Capital: Engineering, Procurement & Const	Quantity 8,095,823 8,095,823 8,095,823 ruction Manageme	Units ton ton ton		Cost \$194,299,745 \$22,668,304 \$9,487,292 \$226,455,341 \$27,174,641
	Total Capital:				\$253,600,000
	INS	STITUTIONA	L CONTRO	LS	
Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Const	ruction Manageme	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth of Long-term Monitoring	of Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term	O&M Costs			\$4,513,889
	Total Project Capital and O&M	Cost			\$4,500,000

BAYPORT CLOSURE

Capital Items Clean Soil Cap Seeding Mitigation		Quantity 2,178,000 2,178,000 450	Units cy sy acre		Cost \$21,780,000 \$2,178,000 \$4,500,000
	Present Worth of Direct Capital: Engineering, Procurement & Constru	ection Manageme	ent:		\$2,766,749 \$332,010
	Total Capital:				\$3,098,759
Present Worth	of Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	972	\$14,628
Long-term Monitoring			40	63,194	\$950,842
Long-term O&M			40	6,025	\$90,659
Total Present Worth, Longer Term O&M Costs					\$1,056,130
	Total Project Capital and O&M Co	ost			\$4,200,000
	TOTAL COST				\$404,500,000

ALTERNATIVE F: Cap Sediment to Maximum Extent Possible, Dredge to CDF and Off-site Disposal

CDF CONSTRUCTION

Capital Items		Quantity	Units		Cost
Land Lease or Purchase	•	2,700,000	sf		\$4,860,000
Shot Rock/Rip Rap		9,600	lf		\$6,816,000
Sheetpile Placement		288,000	sf		\$5,472,000
Clean Soil Cap		205,000	cy		\$2,050,000
Seeding		300,000	sy		\$300,000
Mitigation		62	acre		\$619,835
	Direct Capital:				\$20,117,835
	Engineering, Procurement & Constru	iction Manageme	ent:		\$2,414,140
	Total Capital:				\$22,531,975
Present Worth	f Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	10,000	\$150,463
Long-term Monitoring			40	650,000	\$9,780,093
Long-term O&M			40	450,639	\$6,780,456
	Total Present Worth, Longer Term O	&M Costs			\$16,711,012
	Total Project Capital and O&M C	ost			\$39,200,000

CAPPING

Capital Items		Quantity	Units		Cost
Mobilization/Site Prep		1	LS		\$200,000
Sand Purchase		1,819,641	tons		\$10,917,848
Sand Placement		1,299,744	cy		\$7,798,463
Cobble Purchase and Pl	acement	779,846	cy		\$23,395,388
Cap Placement QA		1	LS		\$100,000
	Direct Capital:				\$42,411,699
	Engineering, Procurement & Constr	ruction Managem	ent:		5,089,404
	Total Capital:				\$47,501,103
Present Worth o Monitoring/O&M	f Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring			40	\$400,000	\$6,018,519
Long-term O&M			40	\$950,022	\$14,294,314
	Total Present Worth, Longer Term	O&M Costs			\$20,312,833
	Total Project Capital and O&M (Cost			\$67,800,000

SEDIMENT REMOVAL (MECHANICAL DREDGING)

	SEDIMENT I	REMOVAL (N	AECHANIC.	AL DREDGING)	
Capital Items Mobilization - Equipm Watertight Barges Offload Stockpile Area Dredging - 12 hour shi Dredge Monitoring (W Sediment Removal QA Offload Crane Mobiliz Site Restoration	n Prep. fts 'ater Quality)	Quantity 3 4 1 2,464 2,464 2,464 1 1 ruction Management	Units LS ea LS Day Day Day ES ea		Cost \$1,470,000 \$400,000 \$75,000 \$41,888,000 \$7,392,000 \$2,956,800 \$500,000 \$500,000 \$54,731,800 6,567,816 8,209,770
		WATED T	DE ATMENT	r	
		WAIEKI	REATMENT	l	
Capital Items Unit Purchase Water Treatment (Inch Water Treatment QA	udes Operator) Direct Capital: Engineering, Procurement & Constr	Quantity 287 268,170,233 1,687	Units gpm gal day		Cost \$570,498 \$107,268 \$337,400 \$1,015,166 121,820
	Total Capital:	uction Manageme	ant.		\$1,100,000
	тотат Сарпат.				31,100,000
	SEDIMENT DISPOSAL	L (Existing NR	500 Comme	ercial Disposal Facility)	
Capital Items		Quantity	Units		Cost
Solidification		2,661,249	ton		\$66,531,225
Lime Purchase		266,125	ton		\$15,967,500
Soil Loading		2,661,249	ton		\$7,451,497
Soil Hauling		2,661,249	ton		\$12,474,605
Tipping Fees (non-TSC	CA)	2,409,353	ton		\$103,602,198
Tipping Fees (TSCA)		251,896	ton		\$13,854,255
	Direct Capital:				\$219,881,280
	Engineering, Procurement & Constr	ruction Manageme	ent:		26,385,754
	Total Capital:				\$246,300,000
	п	NSTITUTION	IAL CONTR	ROLS	
Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Constr	ruction Manageme	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth of Long-term Monitoring	of Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term	O&M Costs			\$4,513,889
	Total Project Capital and O&M (Cost			\$4,500,000

BAYPORT CLOSURE

Capital Items Clean Soil Cap Seeding Mitigation		Quantity 2,178,000 2,178,000 450	Units cy sy acre		Cost \$21,780,000 \$2,178,000 \$4,500,000
	Present Worth of Direct Capital: Engineering, Procurement & Constru	action Manageme	ent:		\$2,766,749 \$332,010
	Total Capital:				\$3,098,759
Present Worth	of Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	972	\$14,628
Long-term Monitoring			40	63,194	\$950,842
Long-term O&M			40	6,025	\$90,659
	Total Present Worth, Longer Term O&M Costs				\$1,056,130
	Total Project Capital and O&M C	ost			\$4,200,000
	TOTAL COST				\$432,600,000

BASIS FOR PRELIMINARY COST ESTIMATES SEDIMENT REMEDIATION FOX RIVER, WISCONSIN DE PERE TO GREEN BAY Action Level - 250 ppb

	**		
Material Handling Assumptions:			
Volume > 250 ppb	6,449,065 cy 1103 ac	4,922,950 m3	Acres corresponds to dredge footprint
Volume > 125 ppb	6,868,500 cy	5,243,130 m3	area
Volume > 500 ppb	6,169,458 cy	4,709,510 m3	
Volume > 1,000 ppb Volume > 5000 ppb	5,879,529 cy 4,517,391 cy	4,488,190 m3 3,448,390 m3	
Volume > 50,000 ppb	240,778 cy	183,800 m3	
Solids Specific Gravity	2.36	105,000 1115	
Fresh Water Density	62.4 lb/ft3		
In Situ Density	33.8% w/w 17.8% v/v	1.05 tons per cy	
Slurry Density (20% in situ)	8.0% w/w 3.6% v/v	0.88 tons per cy	Ogden Beeman
Dewatered Density (settling pond)	30% w/w 15.4% v/v	1.02 tons per cy	Montgomery Watson
Dewatered Density (Hydraulic Dredging and CDF)	50.0% w/w 29.8% v/v	1.18 tons per cy	Foth & VanDyke
Dewatered Density (Mechanical Dredging)	33.8% w/w 17.8% v/v 93.4% w/w 60.0% v/v	1.05 tons per cy	
Treated Density CDF Capacity	2,136,771 cy in situ	1.28 tons per cy 974,801 m3	
HTTD Treatment Capacity	1,577,177 cy in situ	1,650,000 tons	
Cap Volume	2,015,618 cy	1,538,640 m3	
Vitrification Treatment Capacity	9,106,166 cy in situ	6440000.00 tons	
Cost Estimating Parameters & Methodology:			
Interest Rate	6.0%		N. d. I.
Sales Tax Engineering, Procurement and Construction Mgmt	5.5% 12.0%		Not Used
Contractor Overhead and Profit - Dredging Only	15.0%		
Dredging	13.070		
Dredge Monitoring (Water Quality)	\$3,000 per day		
Sediment Removal QA	\$1,200 per day		
Debris Sweep	\$16,000 per acre		Ogden Beeman
Hydraulic - 2 12-inch Cutterheads			
Site Preparation	\$803,400 LS		Ogden Beeman
Mobilization - Equipment Mobilization - Silt Curtain	\$1,135,000 LS		Ogden Beeman Ogden Beeman
Shift Rate (12 hours)	\$35,000 \$14,200 per shift		Ogden Beeman
Dredge Rate	2885 cy in situ per 12 hour sh	nift.	Ogden Beeman
Winter Over Equipment	\$285,000 per year		Ogden Beeman
Site Restoration	\$600,000 per dredge launch site		
Length of Piping	95,000 ft	18 mi	
			Distance to Town of Holland (map
			provided by Fred Swed). 11 mi of hard
D: : D 1 / (1) (1)	0.07		piping plus 7 mi of floating pipe
Piping Purchase/Installation Number of Road Crossings	\$67 per ft 12 each		Ogden Beeman pj, review map
Cost per Road Crossing	\$50,000 per crossing		pj, review map
Number of Booster Pumps	4 each		Ogden Beeman
Booster Pump Cost	\$2,500 per day		Ogden Beeman
Mechanical - 8 cy bucket			
Dock Construction	\$400,000 LS		pj
Mobilization - Equipment	\$455,000 per dredge		Ogden Beeman
Mobilization - Silt Curtain	\$35,000 LS		Ogden Beeman
Mobilization - Watertight Barge	\$100,000 ea		Ogden Beeman - JAG estimate Ogden Beeman
Shift Rate (10 hours) Dredge Rate	\$17,000 per shift 1900 cy in situ per 10 hour sh	nift.	Ogden Beeman
Offload Stockpile Area Prep.	\$75,000 per area	iiit	pj
Free Water per cy Dredged (10%)	20 gal		Ogden Beeman
Offload Crane Mobilization	\$50,000 LS		pj
Site Restoration	\$500,000 LS		pj
High Temperature Thermal Desorption	***		
Setup Staging Area	\$50,000		pj
Mobilization/Site Prep Sediment Treatment QA	\$150,000 \$2 per ton		Maxymillian
Ratio of Amending Sand Volume to Dredge Vol.	0.25 :1		
Sand Purchase and Deliver	\$6 per ton		Ole
Blending	\$25 per ton		Ole
HTTD (includes off-gas treatment)	\$75 per ton		Maxymillian
Stack Testing	\$50,000 LS		Maxymillian
Place Treated Material	\$3 per ton		
Vitrification			
Capital Costs	\$36,000,000 LS		Unit Cost Study- Minergy
Operating Costs Vitrification (Unit Cost includes Cap and Oper Costs)	\$6,800,000 per year \$24.0 per ton		Unit Cost Study- Minergy Unit Cost Study- Minergy
Capping	324.0 per ton		Olit Cost Study- Willergy
Mobilization/Site Prep	\$200,000		Ogden Beeman
Area		,905,900 m2	
Sand Cap Depth	1.7 feet		Ola
Sand Purchase Placement Rate	\$6 per ton \$6 per cy		Ole Ogden Beeman
Sand Density	1.4 tons per cy		Ogucii Decinaii
Armored Cap Depth	1.0 feet		
Cobbles	\$30 per cy		Means
Sand Density	1.4 tons per cy		Order Brown
Cap Placement QA Long-term O&M	\$100,000 LS 2% of capital		Ogden Beeman pj
Long-term Monitoring	\$400,000 per year		Anne LTM
	· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·

Nearshore CDF	#1.00	C	Bayport		D : 1
Land Lease or Purchase Length	\$1.80 9,600				Baird Baird
Capping Volume	205,000		2,178,000		Baird
Seeding Area	300,000		2,178,000		Baird
Sheetpile Wall Length	9,600				based on bathymetry
Sheetpile Depth	30				pj
Sheetpile Cost Shot Rock Berm		per sf per lf			Baird Baird
Rip Rap		per If			pj
Clean Soil Cap		per cy			Baird
Seeding		per sy			Baird
Mitigation	\$10,000				Tim
I was in the second	\$10,000				Tim
Long-term Monitoring Long-term O&M	\$650,000	of capital			Anne LTM
Long-term O&M	2/0	oi capitai			pj
Solidification					
Percent Lime		(w/w)			Montgomery Watson
Lime	\$60	per ton	Mixing	\$25 per ton	pj, pug mill mixing
Dewatering - Mechanical					
Mobilization	\$100,000				pj
Holding Pond-Centrifuge	\$80	per bone dry ton			Global Dewatering
Dewatering - Upland Pond (2 cells)	¢1.00	c.			01
Land Lease or Purchase Area	\$1.80 4,491,228		103.10		Ole 2 days slurry + 13 wk solids * 2 cells * 2
Aica	4,471,220	31	105.10		shifts per day
Perimeter	8,477	lf	2119.251741		assume square
Depth of Material in Dewatering Cell		feet			based on size at Arrowhead Park
Cell Retention Time		hours			Not Used
Cell Depth		feet			
Mobilization Clear and Grub	\$20,000	LS per acre			ni
Berm Volume		cy per lf			pj 2:1 slope, 8-foot top
Berm Construction		per cy			pj
Rough Grading	\$0.25				pj
Alphalt Liner	\$1.50				pj, 2 2-inch lifts
Demob/Disposal Regrade Berm Soils	\$10,000				pj ni
Seed/Sod		per cy per sy			pj Baird
5000 500	Ψ.	per sy			Dunu -
Water Treatment					
Flow Rate (3 Mechanical Dredges)		gpm			assume operate 24/7
Unit, Purchase (3 Mechanical Dredges)	\$216,590				pj
Flow Rate (3 Mechanical Dredges to CDF) Unit, Purchase (3 Mechanical Dredges to CDF)	\$570,498	gpm IS			assume operate 24/7 pj
Flow Rate (2 Hydraulic Dredges)	3,563				assume operate 24/7
Unit, Purchase (Hydraulic Dredge)	\$2,586,470				pj
Flow Rate (2 Hydraulic Dredges; settling pond)	3,110				assume operate 24/7
Flow Rate (mechanical dewatering)	3,563				
Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator)	\$2,586,470 \$0.40	per 1,000 gallons			ni
Water Treatment QA		per day			pj pj, 1 sample/day
Length of piping for treated water discharge	20,000				r),
					Distance from town of Holland to river
Disposal					per map provided by Fred Swed
Existing NR 500 Commercial Disposal Facility Load Soil for Hauling	¢2 9n	per ton			ni
Round-trip Hauling		hours			pj pj
Round-trip Hauling (to Vitrification Facility)		hours			pj
Tipping Fee (non-TSCA)	\$43	per ton			St. Paul
Tipping Fee (TSCA)		per ton			St. Paul
Truck Rate		per hour			pj
Truck Load Conveyer System Construction	1,000,000	tons			pj ni
New Landfill Disposal (Dedicated NR 500 Monofill)	1,000,000	LS			pj
Landfill Construction	\$24,401,866				
Local Siting Fee		per cy			
Closure Cap	\$100,000				
Operating Cost Post-closure Monitoring	\$500,000 \$30,000				
Institutional Controls	\$30,000	per year			
Public Education Program	\$100,000				pj
O&M Plans	\$20,000				pj
Deed Restrictions	\$5,000				pj
Annual Costs Public Education Program	#20.000				ni
Public Education Program Maintaining O&M Plans	\$30,000 \$800				pj pj
Reporting	\$20,000				pj PJ
Long-term Monitoring	\$600,000				Anne LTM
Long-term Monitoring (no action)	\$300,000				Anne LTM

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Construc	ction Managem	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth Long-term Monitoring	of Longer Term Operating Costs g (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term Od	&M Costs			\$4,513,889
	Total Project Capital and O&M Co	st			\$4,500,000
	TOTAL COST				\$4,500,000

ALTERNATIVE B: Monitored Natural Recovery

MONITORING/INSTITUTIONAL CONTROLS

Capital Items		Quantity	Units		Cost
Public Education Progra	am	1	LS		\$100,000
O&M Plans		1	LS		\$20,000
Deed Restrictions		1	LS		\$5,000
	Direct Capital:				\$125,000
	Engineering, Procurement & Constr	uction Managem	ient:		15,000
	Total Capital:				\$140,000
Present Worth o	f Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring			40	\$600,000	\$9,027,778
Public Education Progra	am		40	\$30,000	\$451,389
Maintaining O&M Plan	ıs		40	\$800	\$12,037
Reporting			40	\$20,000	\$300,926
	Total Present Worth, Longer Term C	O&M Costs			\$9,792,130
	Total Project Capital and O&M C	Cost			\$9,900,000
	TOTAL COST				\$9,900,000
					,,

ALTERNATIVE C1: Dredge Sediment With Disposal at Existing NR 500 Commercial Disposal Facility (Passive Dewatering)

SEDIMENT REMOVAL (MECHANICAL DREDGING)

Capital Items	Quantity	Units		Cost
Mobilization - Equipment and Silt Curtain	3	LS		\$1,470,000
Watertight Barges	4	ea		\$400,000
Offload Stockpile Area Prep.	1	LS		\$75,000
Dredging - 12 hour shifts	3,395	Day	26.11538462	\$57,715,000
Dredge Monitoring (Water Quality)	3,395	Day		\$10,185,000
Sediment Removal QA	3,395	Day		\$4,074,000
Offload Crane Mobilization	1	LS		\$50,000
Site Restoration	1	ea		\$500,000
Direct Capital:				\$74,469,000
Engineering, Procurement & Co	8,936,280			
Contractor Overhead/Profit:	_			11,170,350
				•

Total Capital: \$94,600,000

WATER TREATMENT

Capital Items	Quantity	Units	Cost
Unit Purchase	57	gpm	\$216,590
Water Treatment (Includes Operator)	130,245,307	gal	\$52,098
Water Treatment QA	1,584	day	\$316,800
Direct Capital:			\$585,488
Engineering, Procurement	t & Construction Manageme	nt:	70,259
Total Capital:			\$700,000

SEDIMENT DISPOSAL (Existing NR 500 Commercial Disposal Facility)

	Quantity	Units		Cost	
	6,746,839	ton		\$168,670,973	
	674,684	ton		\$40,481,040	
	6,746,839	ton		\$18,891,149	
	6,746,839	ton		\$31,625,808	
(A)	6,494,943	ton		\$279,282,567	\$293,136,820
	251,896	ton		\$13,854,253	
Direct Capital:				\$552,805,790	
Engineering, Procurement & Con	struction Managem	ent:		66,336,695	
Total Capital:				\$619,100,000	
	INSTITUTIO	ONAL CONT	ROLS		
	Quantity	Units		Cost	
	1	LS		\$5,000	
Direct Capital:	-tti M			\$5,000	
	struction Managem	ient:			
Total Capital:				\$5,600	
		Years 40	Annual Cost \$300,000	\$4,513,889	
	n O&M Costs			·	
_					
Total Project Capital and O&s	i Cost			34,300,000	
	BAYPORT	CLOSURE			
	Quantity	Units		Cost	
	450	acre		\$4,500,000	
Present Worth of Direct Capital:				\$2,766,749	
Engineering, Procurement & Con	struction Managem	ent:		\$332,010	
Total Capital:				\$3,098,759	
f Longer Term Operating Costs		Years 40	Annual Cost	\$14.628	
		40		\$950,842	
		40	6,025	\$90,659	
Total Present Worth, Longer Terr	n O&M Costs			\$1,056,130	
Total Project Capital and O&M	Cont			64 200 000	
	Engineering, Procurement & Con Total Capital: Direct Capital: Engineering, Procurement & Con Total Capital: of Longer Term Operating Costs (no action) Total Present Worth, Longer Tern Total Project Capital and O&M Present Worth of Direct Capital: Engineering, Procurement & Con Total Capital: of Longer Term Operating Costs Total Present Worth, Longer Tern	6,746,839 674,684 6,746,839 6,746,83	6,746,839 ton 674,684 ton 6,746,839 ton 251,896 ton Direct Capital: Engineering, Procurement & Construction Management: Total Capital: INSTITUTIONAL CONT Quantity Units 1 LS Direct Capital: Engineering, Procurement & Construction Management: Total Capital: Of Longer Term Operating Costs Years (no action) 40 Total Present Worth, Longer Term O&M Costs Total Project Capital and O&M Cost BAYPORT CLOSURE Quantity Units 2,178,000 cy 2,178,000 sy 450 acre Present Worth of Direct Capital: Engineering, Procurement & Construction Management: Total Capital: Of Longer Term Operating Costs Years 40 40 40 40 Total Present Worth, Longer Term O&M Costs	6,746,839 ton 674,684 ton 6,746,839 ton 6,746,839 ton 6,746,839 ton 1,746,839 ton 251,896 ton Direct Capital: Engineering, Procurement & Construction Management: Total Capital: INSTITUTIONAL CONTROLS Quantity Units 1 LS Direct Capital: Engineering, Procurement & Construction Management: Total Capital: Engineering, Procurement & Construction Management: Total Capital: Engineering, Procurement & Construction Management: Total Project Capital: BAYPORT CLOSURE Quantity Units 2,178,000 cy 450 acre Present Worth of Direct Capital: Engineering, Procurement & Construction Management: Total Capital: of Longer Term Operating Costs Years Annual Cost 40 972 40 63,194 40 6,025 Total Present Worth, Longer Term O&M Costs	Content

ALTERNATIVE C2A: Dredge Sediment with Combined Dewatering and Disposal Facility

TOTAL COST

SEDIMENT REMOVAL (2 12-INCH CUTTERHEADS)

Capital Items	Quantity	Units		Cost
Site Preparation	2	LS		\$1,606,800
Mobilization - Equipment and Silt Curtain	1	LS		\$1,170,000
Debris Sweep	1103	acre		\$17,648,000
Dredging - 2 12 hour shifts/day	1118	Day	6.142857143	\$31,751,200
Dredge Monitoring (Water Quality)	1118	Day		\$6,708,000
Sediment Removal QA	1118	Day		\$2,683,200
Piping	95,000	ft		\$6,365,000
Road Crossings	12	ea		\$600,000
Booster Pumps	4	ea		\$11,180,000
Winter Over All Equipment	7	yr		\$1,995,000
Site Restoration	1	LS		\$600,000
Direct Capital:				\$82,307,200
Engineering, Procurement & C	Construction Managem	ent:		9,876,864
Contractor Overhead/Profit:	· ·			12,346,080
Total Capital:				\$104,500,000

\$723,100,000

WATER TREATMENT

Capital Items		Quantity	Units		Cost
Unit Purchase		3,563	gpm		\$2,586,470
Water Treatment (Inclu- Water Treatment QA	ding Operator)	5,733,885,955 1,118	gal Day		\$2,293,554 \$447,200
Piping		20,000	ft		\$1,340,000
	Direct Capital:				\$6,667,224
	Engineering, Procurement & Cons	ruction Managem	ent:		800,067
	Total Capital:				\$7,500,000
					,,,,,,
	SEDIMENT	DISPOSAL (Dedicated N	R 500 Monofill)	
Capital Items		Quantity	Units		Cost
Landfill Construction		1	LS		\$24,401,866
Local Siting Fee		3,854,126	cy		\$19,270,632
Closure		119	acres		\$11,944,607
	Direct Capital:				\$55,617,105
	Engineering, Procurement & Cons	ruction Managem	ent:		6,674,053
	Total Capital:				\$62,300,000
Present Worth o	f Longer Term Operating Costs		Years	Annual Cost	
Operations			10 40	\$500,000	\$3,680,044
Post Closure Monitoring	3		40	\$30,000	\$252,053
	Total Present Worth, Longer Term	O&M Costs			\$3,932,097
	Total Project Capital and O&M	Cost			\$66,200,000
		INSTITUTIO	NAL CONT	TROLS	
Capital Items		Quantity	Units		Cost
Deed Restrictions		1	LS		\$5,000
	Direct Capital:				\$5,000
	Engineering, Procurement & Cons	ruction Managem	ent:		600
	Total Capital:				\$5,600
Present Worth o	f Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring (40	\$300,000	\$4,513,889
	Total Present Worth, Longer Term	O&M Costs			\$4,513,889
	-				
	Total Project Capital and O&M	Cost			\$4,500,000
		BAYPORT	CLOSURE		
Capital Items		Quantity	Units		Cost
Clean Soil Cap		2,178,000	cy		\$21,780,000
Seeding Mitigation		2,178,000 450	sy acre		\$2,178,000 \$4,500,000
Witigation		430	acre		\$4,500,000
	Present Worth of Direct Capital: Engineering, Procurement & Cons	truction Managem	ent:		\$2,766,749 \$332,010
	Total Capital:				\$3,098,759
Down and Words	fl		3 7	Assessed Coast	
Mitigation	f Longer Term Operating Costs		Years 40	Annual Cost 972	\$14,628
Long-term Monitoring			40	63,194	\$950,842
Long-term O&M			40	6,025	\$90,659
	Total Present Worth, Longer Term	O&M Costs			\$1,056,130
	Total Project Capital and O&M	Cost			\$4,200,000
	TOTAL COST				\$183,000,000

ALTERNATIVE C2B: Dredge Sediment with Separate Dewatering and Disposal Facilities

SEDIMENT REMOVAL (2 12-INCH CUTTERHEADS)

		-			
Capital Items		Quantity	Units		Cost
Site Preparation		2	LS		\$1,606,800
Mobilization - Equipme	nt and Silt Curtain	1	LS		\$1,170,000
Debris Sweep	i Oca/dory	1103	acre	6 142057142	\$17,648,000
Dredging - 2 12 hour sh Dredge Monitoring (Wa		1118 1118	Day Day	6.142857143	\$31,751,200 \$6,708,000
Sediment Removal QA	ner Quarty)	1118	Day		\$2,683,200
Piping		95,000	ft		\$6,365,000
Road Crossings		12	ea		\$600,000
Booster Pumps Winter Over All Equipm	nent	4 7	ea yr		\$11,180,000 \$1,995,000
Site Restoration	nent	1	LS		\$600,000
	Direct Capital: Engineering, Procurement & Con	estruction Managame	unt:		\$82,307,200 9,876,864
	Contractor Overhead/Profit:	istruction ivianageme	ш.		12,346,080
	Total Capital:				\$104,500,000
	-	NT DEWATERI	NG (GRAV	ITY - NR 213)	
				,	
Capital Items		Quantity	Units		Cost
Land Lease or Purchase Mobilization		4,491,228 1	sf LS		\$8,084,210 \$20,000
Clear and Grub		4,491,228	sf		\$206,209
Berm Construction		87,910	cy		\$527,458
Rough Grading		4,491,228	sf		\$1,122,807
Liner Placement Demob/Disposal		4,491,228 1	sf LS		\$6,736,842 \$10,000
Regrade		87,910	cy		\$527,458
Seed/Sod		499,025	sy		\$499,025
	Direct Capital:				\$17,734,010
	Engineering, Procurement & Con	struction Manageme	ent:		2,128,081
	<i>C C C C C C C C C C</i>	Č			
	Total Capital:				\$19,900,000
		WATER TR	REATMENT		
Capital Items		Quantity	Units		Cost
Unit Purchase		3,110	gpm		\$2,586,470
Water Treatment (Inclu	ding Operator)	5,004,927,490	gal		\$2,001,971
Water Treatment QA Piping		1,118 20,000	Day ft		\$447,200 \$1,340,000
pg		20,000			\$1,510,000
	Direct Capital:				\$6,375,641
	Engineering, Procurement & Con	struction Manageme	ent:		765,077
	Total Capital:				\$7,100,000
	SEDIMEN	T DISPOSAL (I	Dedicated NI	R 500 Monofill)	
Canital Itama		Onontitu	Unito		Cont
Capital Items Solidification		Quantity 7,601,439	Units ton		Cost \$190,035,963
Lime Purchase		7,601,439	ton		\$45,608,640
		7,601,439			
Sediment Loading Sediment Hauling		7,601,439	ton ton		\$21,284,028 \$35,631,743
Landfill Construction		1	LS		\$33,031,743 \$24,401,866
Local Siting Fee					\$24,401,866 \$19,270,632
Closure		3,854,126 119	cy acres		\$19,270,632 \$11,944,607
Ciosuic		117	ac155		\$11,944,007
	Direct Capital:				\$348,177,479
	Engineering, Procurement & Con	struction Manageme	ent:		41,781,297
	Total Capital:				\$390,000,000
Present Worth o	f Longer Term Operating Costs		Years	Annual Cost	
Operations			10	\$500,000	\$3,680,044
Post Closure Monitoring	3		40	\$30,000	\$252,053
	Total Present Worth, Longer Terr	m O&M Costs			\$3,932,097
	Total Project Capital and O&M	A Cost			\$393,900,000

INSTITUTIONAL CONTROLS

Quantity 1	Units LS		Cost \$5,000
Capital: ering, Procurement & Construction Managem	nent:		\$5,000 600
Capital:			\$5,600
Term Operating Costs	Years 40	Annual Cost \$300,000	\$4,513,889
resent Worth, Longer Term O&M Costs			\$4,513,889
Project Capital and O&M Cost			\$4,500,000
BAYPORT	CLOSURE		
Quantity	Units		Cost
			\$21,780,000
	-		\$2,178,000
450	acre		\$4,500,000
Worth of Direct Capital:			\$2,766,749
	nent:		\$332,010
			, , , , , , , , , , , , , , , , , , ,
Capital:			\$3,098,759
Term Operating Costs	Years	Annual Cost	
	40	972	\$14,628
	40	63,194	\$950,842
	40	6,025	\$90,659
resent Worth, Longer Term O&M Costs			\$1,056,130
Project Capital and O&M Cost			\$4,200,000
L COST			\$534,100,000
	Capital: ering, Procurement & Construction Managem Capital: Term Operating Costs Term Operating Costs Term Operating Costs Project Capital and O&M Cost BAYPORT Quantity 2,178,000 2,178,000 450 Worth of Direct Capital: ering, Procurement & Construction Managem Capital: Term Operating Costs Project Capital and O&M Costs Project Capital and O&M Costs	Term Operating Costs Project Capital and O&M Cost BAYPORT CLOSURE Quantity 2,178,000 cy 2,178,000 cy 2,178,000 sy 450 acre Worth of Direct Capital: ering, Procurement & Construction Management: Capital: Term Operating Costs Project Capital and O&M Cost Worth of Direct Capital: ering, Procurement & Construction Management: Capital: Term Operating Costs Years 40 40 40 resent Worth, Longer Term O&M Costs Project Capital and O&M Cost	Capital: ering, Procurement & Construction Management: Capital: Term Operating Costs Years 40 \$300,000 resent Worth, Longer Term O&M Costs Project Capital and O&M Cost BAYPORT CLOSURE Quantity 2,178,000 2,178,000 3y 450 acre Worth of Direct Capital: ering, Procurement & Construction Management: Capital: Term Operating Costs Years 40 972 40 63,194 40 6,025 resent Worth, Longer Term O&M Costs Project Capital and O&M Cost

ALTERNATIVE C3: Dredge Sediment With Disposal at Existing NR 500 Commercial Disposal Facility (Mechanical Dewatering)

SEDIMENT REMOVAL (2 - 12-inch CUTTERHEADS)

Capital Items	Quantity	Units		Cost
Site Preparation	2	LS		\$1,606,800
Mobilization - Equipment and Silt Curtain	1	LS		\$1,170,000
Debris Sweep	1103	acre		\$17,648,000
Dredging - 2 12 hour shifts/day	1118	Day	6.142857143	\$31,751,200
Dredge Monitoring (Water Quality)	1118	Day		\$6,708,000
Sediment Removal QA	1118	Day		\$2,683,200
Winter Over All Equipment	7	yr		\$1,995,000
Site Restoration	1	LS		\$600,000
Direct Capital:				\$64,162,200
Engineering, Procurement & Co	nstruction Managem	ent:		7,699,464
Contractor Overhead/Profit:	9,624,330			
Total Capital:				\$81,500,000

SEDIMENT DEWATERING (MECHANICAL)

Capital Items	Quantity	Units	Cost
Mobilization/Site Prep	1	LS	\$100,000
Dewatering	2,280,432	bdt	\$182,434,525
	Direct Capital:		\$182,534,525
	Engineering, Procurement & Construction Management	ent:	21,904,143
	Total Capital:		\$204,400,000

WATER TREATMENT

Capital Items Unit Purchase		Quantity 3,563	Units gpm		Cost \$2,586,470
Water Treatment (Inclu Water Treatment QA	des Operator)	5,733,885,955 3,130	gal day		\$2,293,554 \$626,000
	Direct Capital:				\$5,506,024
	Engineering, Procurement & Const	ruction Manageme	ent:		660,723
	Total Capital:				\$6,200,000
	SEDIMENT DISPOSA	AL (Existing N	R 500 Com	mercial Disposal Facility)	
Capital Items		Quantity	Units		Cost
Soil Loading		4,560,863	ton		\$12,770,417
Soil Hauling		4,560,863	ton		\$21,379,046
Tipping Fees (non-TSC	A)	4,390,582	ton		\$188,795,016
Tipping Fees (TSCA)		170,281	ton		\$9,365,475
	Direct Capital:				\$232,309,953
	Engineering, Procurement & Const	ruction Manageme	ent:		27,877,194
	Total Capital:				\$260,200,000
	IN	STITUTION	AL CONTE	ROLS	
Capital Items		Quantity	Units		Cost
Deed Restrictions		1	LS		\$5,000
	Direct Capital: Engineering, Procurement & Const	ruction Manageme	ent:		\$5,000 600
	Total Capital:				\$5,600
	f Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring	(no action)		40	\$300,000	\$4,513,889
	Total Present Worth, Longer Term	O&M Costs			\$4,513,889
	Total Project Capital and O&M	Cost			\$4,500,000
		BAYPORT	CLOSURI	E	
Capital Items		Quantity	Units		Cost
Clean Soil Cap		2,178,000	cy		\$21,780,000
Seeding Mitigation		2,178,000 450	sy acre		\$2,178,000 \$4,500,000
·······gation	Present Worth of Direct Capital:	.50	uere		\$2,766,749
	Engineering, Procurement & Const	ruction Manageme	ent:		\$332,010
	Total Capital:				\$3,098,759
	f Longer Term Operating Costs		Years	Annual Cost	
Mitigation Long-term Monitoring			40 40	972 63,194	\$14,628 \$950,842
Long-term O&M			40	6,025	\$90,659
	Total Present Worth, Longer Term	O&M Costs			\$1,056,130
	Total Project Capital and O&M	Cost			\$4,200,000
	TOTAL COST				\$561,000,000

SEDIMENT REMOVAL (MECHANICAL DREDGING)

Capital Items	107.0	Quantity	Units		Cost
Mobilization - Equipme Watertight Barges	ent and Silt Curtain	3 4	LS ea		\$1,470,000 \$400,000
Offload Stockpile Area	Prep.	1	LS		\$75,000
Dredging - 12 hour shif	ts	3,395	Day		\$57,715,000
Dredge Monitoring (Wa		3,395	Day		\$10,185,000
Sediment Removal QA Offload Crane Mobiliza		3,395 1	Day LS		\$4,074,000 \$50,000
Site Restoration	ition	1	ea		\$500,000
	Direct Capital:				\$74,469,000
	Engineering, Procurement & Cor Contractor Overhead/Profit:	struction Managem	ent:		8,936,280 11,170,350
	Contractor Overnead/Front.				11,170,330
	Total Capital:				\$94,600,000
		CDF CONS	TRUCTION	I	
Capital Items		Quantity	Units		Cost
Land Lease or Purchase Shot Rock/Rip Rap	;	2,700,000 9,600	sf lf		\$4,860,000 \$6,816,000
Sheetpile Placement		288,000	sf		\$5,472,000
Clean Soil Cap		205,000	cy		\$2,050,000
Seeding		300,000	sy		\$300,000
Mitigation		62	acre		\$619,835
	Direct Capital:				\$20,117,835
	Engineering, Procurement & Con	nstruction Managem	ent:		\$2,414,140
	Total Capital:				\$22,531,975
Present Worth o	f Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	10,000	\$150,463
Long-term Monitoring			40	650,000	\$9,780,093
Long-term O&M			40	450,639	\$6,780,456
	Total Present Worth, Longer Ter	m O&M Costs			\$16,711,012
	Total Project Capital and O&M	A Cost			\$39,200,000
		WATER	TREATME	NT	
		WHILK	T TOLET TOLET	.,,,	
Capital Items		Quantity	Units		Cost
Unit Purchase		287	gpm		\$570,498
Water Treatment (Inclu	des Operator)	303,886,859	gal		\$121,555
Water Treatment QA		1,584	day		\$316,800
	Direct Capital: Engineering, Procurement & Con	etruction Managem	ent:		\$1,008,853 121,062
	Total Capital:	ion action managem	·····		\$1,100,000
					,,
	SEDIMENT DISPO	SAL (Existing N	R 500 Com	mercial Disposal Facility)	
Capital Items		Quantity	Units		Cost
Solidification		4,511,406	ton		\$112,785,150
Lime Purchase		451,141	ton		\$27,068,460
Soil Loading		4,511,406	ton		\$12,631,937
Soil Hauling		4,511,406	ton		\$21,147,216
Tipping Fees (non-TSC	(A)	4,259,510	ton		\$183,158,951
Tipping Fees (TSCA)	,	376,711	ton		\$20,719,131
11 5 (-~)		**,*			~~·,· · · · · · · ·
	Direct Capital:				\$377,510,845
	Engineering, Procurement & Cor	nstruction Managem	ent:		45,301,301
	Total Capital:				\$422,800,000

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Construc	ction Manageme	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth Long-term Monitoring	of Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term Od	&M Costs			\$4,513,889
	Total Project Capital and O&M Co	st			\$4,500,000
		BAYPORT	CLOSURE		
Capital Items Clean Soil Cap Seeding Mitigation		Quantity 2,178,000 2,178,000 450	Units cy sy acre		Cost \$21,780,000 \$2,178,000 \$4,500,000
	Present Worth of Direct Capital: Engineering, Procurement & Construc	ction Manageme	ent:		\$2,766,749 \$332,010
	Total Capital:				\$3,098,759
Present Worth Mitigation Long-term Monitoring Long-term O&M	of Longer Term Operating Costs		Years 40 40 40	Annual Cost 972 63,194 6,025	\$14,628 \$950,842 \$90,659

ALTERNATIVE E: Dredge Sediment and Thermal Treatment

TOTAL COST

Total Present Worth, Longer Term O&M Costs

Total Project Capital and O&M Cost

SEDIMENT REMOVAL (2 - 12-inch CUTTERHEAD'S)

\$1,056,130

\$4,200,000

\$566,400,000

Capital Items	Quantity	Units		Cost
Site Preparation	2	LS		\$1,606,800
Mobilization - Equipment and Silt Curtain	1	LS		\$1,170,000
Debris Sweep	1103	acre		\$17,648,000
Dredging - 2 12 hour shifts/day	1118	Day	6.142857143	\$31,751,200
Dredge Monitoring (Water Quality)	1118	Day		\$6,708,000
Sediment Removal QA	1118	Day		\$2,683,200
Piping	95,000	ft		\$6,365,000
Road Crossings	12	ea		\$600,000
Booster Pumps	4	ea		\$11,180,000
Winter Over All Equipment	7	yr		\$1,995,000
Site Restoration	1	LS		\$600,000
Direct Capital:				\$82,307,200
Engineering, Procurement & Co	nstruction Managem	ent:		9,876,864
Contractor Overhead/Profit:				12,346,080
Total Capital:				\$104,500,000

SEDIMENT DEWATERING (GRAVITY)

Capital Items		Quantity	Units		Cost
Land Lease or Purchase		4,491,228	sf		\$8,084,210
Mobilization		1	LS		\$20,000
Clear and Grub		4,491,228	sf		\$206,209
Berm Construction Rough Grading		87,910 4,491,228	cy sf		\$527,458 \$1,122,807
Liner Placement		4,491,228	sf		\$6,736,842
Demob/Disposal		1	LS		\$10,000
Regrade		87,910	cy		\$527,458
Seed/Sod		499,025	sy		\$499,025
	Direct Capital:				\$17,734,010
	Engineering, Procurement & Const	rustian Managam	ont:		2,128,081
	Engineering, Procurement & Const	ruction managem	ciit.		2,120,001
	Total Capital:				\$19,900,000
	•				
		WATER TH	REATMENT		
6		0 4	#T **		G .
Capital Items Unit Purchase		Quantity 3,110	Units gpm		Cost \$2,586,470
Water Treatment (Include	ling Operator)	5,004,927,490	gal		\$2,001,971
Water Treatment QA	3 - 1	1,118	Day		\$447,200
Piping		95,000	ft		\$6,365,000
	Direct Capital:				\$11,400,641
	Engineering, Procurement & Const	ruction Managem	ent:		1,368,077
	Total Canitals				612 800 000
	Total Capital: SEDIMENT TREATMEN	T (VITRIFIC	ATION 2x37	5 t Standalone Storage Units)	\$12,800,000
		- (,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
Capital Items		Quantity	Units		Cost
Sediment Treatment		7,601,439	ton		\$182,434,525
Soil Loading Soil Hauling		7,601,439 7,601,439	ton ton		\$21,284,028 \$8,907,936
5011 Flating	Direct Capital:	7,001,437	ton		\$212,626,488
	Engineering, Procurement & Const	ruction Managem	ent:		\$25,515,179
	Total Capital:				\$238,100,000
	Total Capital.				\$250,100,000
	IN	NSTITUTION.	AL CONTR	OLS	
Capital Items		Quantity	Units		Cost
Deed Restrictions		1	LS		\$5,000
	P				
	Direct Capital: Engineering, Procurement & Const				Ø.5.000
		ruction Managem	ent:		\$5,000 600
		ruction Managem	ent:		\$5,000 600
	Total Capital:	ruction Managem	ent:		
Present Worth of	-	ruction Managem		Annual Cost	600
	Longer Term Operating Costs	ruction Managem	Years	Annual Cost \$300,000	\$5,600
Present Worth of Long-term Monitoring (Longer Term Operating Costs	ruction Managem	Years	Annual Cost \$300,000	600
	Longer Term Operating Costs	·	Years		\$5,600
	F Longer Term Operating Costs no action) Total Present Worth, Longer Term	O&M Costs	Years		\$5,600 \$4,513,889 \$4,513,889
	f Longer Term Operating Costs no action)	O&M Costs	Years		\$5,600 \$4,513,889
	F Longer Term Operating Costs no action) Total Present Worth, Longer Term	O&M Costs Cost	Years 40	\$300,000	\$5,600 \$5,600 \$4,513,889 \$4,513,889
	F Longer Term Operating Costs no action) Total Present Worth, Longer Term	O&M Costs Cost	Years	\$300,000	\$5,600 \$5,600 \$4,513,889 \$4,513,889
Long-term Monitoring (Capital Items	F Longer Term Operating Costs no action) Total Present Worth, Longer Term	O&M Costs Cost BAYPORT Quantity	Years 40 CLOSURE Units	\$300,000	\$5,600 \$5,600 \$4,513,889 \$4,513,889 \$4,500,000
Long-term Monitoring (Capital Items Clean Soil Cap	F Longer Term Operating Costs no action) Total Present Worth, Longer Term	O&M Costs Cost BAYPORT Quantity 2,178,000	Years 40 CLOSURE Units cy	\$300,000	\$5,600 \$5,600 \$4,513,889 \$4,513,889 \$4,500,000 Cost \$21,780,000
Capital Items Clean Soil Cap Seeding	F Longer Term Operating Costs no action) Total Present Worth, Longer Term	O&M Costs Cost BAYPORT Quantity 2,178,000 2,178,000	Years 40 CLOSURE Units cy sy	\$300,000	\$5,600 \$4,513,889 \$4,513,889 \$4,500,000 \$2,178,000 \$2,178,000
Long-term Monitoring (Capital Items Clean Soil Cap	FLonger Term Operating Costs no action) Total Present Worth, Longer Term Total Project Capital and O&M	O&M Costs Cost BAYPORT Quantity 2,178,000	Years 40 CLOSURE Units cy	\$300,000	\$4,513,889 \$4,513,889 \$4,500,000 \$2,178,000 \$4,500,000
Capital Items Clean Soil Cap Seeding	FLonger Term Operating Costs no action) Total Present Worth, Longer Term Total Project Capital and O&M of the Company of the Capital and O&M of the Capital an	O&M Costs Cost BAYPORT Quantity 2,178,000 2,178,000 450	Years 40 CLOSURE Units cy sy acre	\$300,000	\$5,600 \$5,600 \$4,513,889 \$4,513,889 \$4,500,000 \$2,1780,000 \$2,178,000 \$4,500,000 \$2,766,749
Capital Items Clean Soil Cap Seeding	FLonger Term Operating Costs no action) Total Present Worth, Longer Term Total Project Capital and O&M	O&M Costs Cost BAYPORT Quantity 2,178,000 2,178,000 450	Years 40 CLOSURE Units cy sy acre	\$300,000	\$4,513,889 \$4,513,889 \$4,500,000 \$2,178,000 \$4,500,000
Capital Items Clean Soil Cap Seeding	FLonger Term Operating Costs no action) Total Present Worth, Longer Term Total Project Capital and O&M of the Company of the Capital and O&M of the Capital an	O&M Costs Cost BAYPORT Quantity 2,178,000 2,178,000 450	Years 40 CLOSURE Units cy sy acre	\$300,000	\$5,600 \$5,600 \$4,513,889 \$4,513,889 \$4,500,000 \$2,1780,000 \$2,178,000 \$4,500,000 \$2,766,749
Capital Items Clean Soil Cap Seeding Mitigation Present Worth of	FLonger Term Operating Costs no action) Total Present Worth, Longer Term Total Project Capital and O&M of the Company of the Capital and O&M of the Capital and O	O&M Costs Cost BAYPORT Quantity 2,178,000 2,178,000 450	Years 40 CLOSURE Units cy sy acre ent:	\$300,000 Annual Cost	\$5,600 \$5,600 \$4,513,889 \$4,513,889 \$4,500,000 \$2,178,000 \$2,178,000 \$4,500,000 \$2,766,749 \$332,010 \$3,098,759
Capital Items Clean Soil Cap Seeding Mitigation Present Worth of Mitigation	FLonger Term Operating Costs no action) Total Present Worth, Longer Term Total Project Capital and O&M of the Ca	O&M Costs Cost BAYPORT Quantity 2,178,000 2,178,000 450	Years 40 CLOSURE Units cy sy acre ent: Years 40	\$300,000 Annual Cost 972	\$4,513,889 \$4,513,889 \$4,500,000 \$2,1780,000 \$2,178,000 \$4,500,000 \$2,766,749 \$332,010 \$3,098,759
Capital Items Clean Soil Cap Seeding Mitigation Present Worth of Mitigation Long-term Monitoring	FLonger Term Operating Costs no action) Total Present Worth, Longer Term Total Project Capital and O&M of the Ca	O&M Costs Cost BAYPORT Quantity 2,178,000 2,178,000 450	Years 40 CLOSURE Units cy sy acre ent: Years 40 40	\$300,000 Annual Cost 972 63,194	\$5,600 \$5,600 \$4,513,889 \$4,513,889 \$4,500,000 \$2,178,000 \$2,178,000 \$4,500,000 \$2,766,749 \$332,010 \$3,098,759
Capital Items Clean Soil Cap Seeding Mitigation Present Worth of Mitigation	FLonger Term Operating Costs no action) Total Present Worth, Longer Term Total Project Capital and O&M of the Ca	O&M Costs Cost BAYPORT Quantity 2,178,000 2,178,000 450	Years 40 CLOSURE Units cy sy acre ent: Years 40	\$300,000 Annual Cost 972	\$4,513,889 \$4,513,889 \$4,500,000 \$2,1780,000 \$2,178,000 \$4,500,000 \$2,766,749 \$332,010 \$3,098,759
Capital Items Clean Soil Cap Seeding Mitigation Present Worth of Mitigation Long-term Monitoring	FLonger Term Operating Costs no action) Total Present Worth, Longer Term Total Project Capital and O&M of the Ca	O&M Costs Cost BAYPORT Quantity 2,178,000 2,178,000 450 ruction Managem	Years 40 CLOSURE Units cy sy acre ent: Years 40 40	\$300,000 Annual Cost 972 63,194	\$5,600 \$5,600 \$4,513,889 \$4,513,889 \$4,500,000 \$2,178,000 \$2,178,000 \$4,500,000 \$2,766,749 \$332,010 \$3,098,759
Capital Items Clean Soil Cap Seeding Mitigation Present Worth of Mitigation Long-term Monitoring	FLonger Term Operating Costs no action) Total Present Worth, Longer Term Total Project Capital and O&M of the Capital and Capital	O&M Costs Cost BAYPORT Quantity 2,178,000 2,178,000 450 ruction Managem	Years 40 CLOSURE Units cy sy acre ent: Years 40 40	\$300,000 Annual Cost 972 63,194	\$5,600 \$5,600 \$4,513,889 \$4,513,889 \$4,500,000 \$2,178,000 \$2,178,000 \$4,500,000 \$2,766,749 \$332,010 \$3,098,759 \$14,628 \$950,842 \$90,659
Capital Items Clean Soil Cap Seeding Mitigation Present Worth of Mitigation Long-term Monitoring	FLonger Term Operating Costs no action) Total Present Worth, Longer Term Total Project Capital and O&M of the Computation of Direct Capital: Engineering, Procurement & Const. Total Capital: FLonger Term Operating Costs	O&M Costs Cost BAYPORT Quantity 2,178,000 2,178,000 450 ruction Managem	Years 40 CLOSURE Units cy sy acre ent: Years 40 40	\$300,000 Annual Cost 972 63,194	\$5,600 \$5,600 \$4,513,889 \$4,513,889 \$4,500,000 \$21,780,000 \$2,178,000 \$4,500,000 \$2,766,749 \$332,010 \$3,098,759 \$14,628 \$950,842 \$90,659 \$1,056,130
Capital Items Clean Soil Cap Seeding Mitigation Present Worth of Mitigation Long-term Monitoring	FLonger Term Operating Costs no action) Total Present Worth, Longer Term Total Project Capital and O&M of the Capital and Capital	O&M Costs Cost BAYPORT Quantity 2,178,000 2,178,000 450 ruction Managem	Years 40 CLOSURE Units cy sy acre ent: Years 40 40	\$300,000 Annual Cost 972 63,194	\$5,600 \$5,600 \$4,513,889 \$4,513,889 \$4,500,000 \$2,178,000 \$2,178,000 \$4,500,000 \$2,766,749 \$332,010 \$3,098,759 \$14,628 \$950,842 \$90,659 \$1,056,130

ALTERNATIVE F: Cap Sediment to Maximum Extent Possible, Dredge to CDF and Off-site Disposal

CDF CONSTRUCTION

Capital Items Land Lease or Purchase Shot Rock/Rip Rap Sheetpile Placement Clean Soil Cap Seeding Mitigation	Direct Capital: Engineering, Procurement & Constr	Quantity 2,700,000 9,600 288,000 205,000 300,000 62	Units sf If sf cy sy acre		Cost \$4,860,000 \$6,816,000 \$5,472,000 \$2,050,000 \$300,000 \$619,835 \$20,117,835 \$2,414,140
	Total Capital:				\$22,531,975
Present Worth of Mitigation Long-term Monitoring Long-term O&M	Longer Term Operating Costs Total Present Worth, Longer Term (O&M Costs	Years 40 40 40	Annual Cost 10,000 650,000 450,639	\$150,463 \$9,780,093 \$6,780,456 \$16,711,012
	Total Project Capital and O&M (Cost			\$39,200,000
		CA	APPING		
Capital Items Mobilization/Site Prep Sand Purchase Sand Placement Cobble Purchase and Pla Cap Placement QA	cement Direct Capital:	Quantity 1 1,772,853 1,266,323 759,794 1	Units LS tons cy cy LS		Cost \$200,000 \$10,637,116 \$7,597,940 \$22,793,820 \$100,000 \$41,328,876
	Engineering, Procurement & Constr	uction Manageme	ent:		4,959,465
	Total Capital:				\$46,288,341
Present Worth of Monitoring/O&M Long-term Monitoring Long-term O&M	Longer Term Operating Costs Total Present Worth, Longer Term 0	O&M Costs	Years 40 40	Annual Cost \$400,000 \$925,767	\$6,018,519 \$13,929,362 \$19,947,881
	Total Project Capital and O&M (\$66,200,000
	Toma Trojece Suprim unu Seam C	-			300,200,000
	SEDIMENT	REMOVAL	(MECHANI	CAL DREDGING)	
Capital Items Mobilization - Equipmer Watertight Barges Offload Stockpile Area I Dredging - 12 hour shifts Dredge Monitoring (Wat Sediment Removal QA Offload Crane Mobilizat Site Restoration	Prep. S eer Quality) ion	Quantity 3 4 1 2,334 2,334 2,334 1 1	Units LS ea LS Day Day Day LS ea		Cost \$1,470,000 \$400,000 \$75,000 \$39,678,000 \$7,002,000 \$2,800,800 \$50,000
	Direct Capital: Engineering, Procurement & Constr Contractor Overhead/Profit:	ruction Manageme	ent:		\$51,975,800 6,237,096 7,796,370
	Total Capital:				\$66,000,000
		WATER 7	TREATMEN	NT	
Capital Items Unit Purchase Water Treatment (Includ Water Treatment QA	es Operator)	Quantity 287 263,179,430 1,584	Units gpm gal day		Cost \$570,498 \$105,272 \$316,800
	Direct Capital: Engineering, Procurement & Constr	uction Manageme	ent:		\$992,570 119,108
	Total Capital:				\$1,100,000

SEDIMENT DISPOSAL (Existing NR 500 Commercial Disposal Facility)

Capital Items		Quantity	Units		Cost
Solidification		2,402,720	ton		\$60,068,000
Lime Purchase		240,272	ton		\$14,416,320
Soil Loading		2,402,720	ton		\$6,727,616
Soil Hauling		2,402,720	ton		\$11,262,750
Tipping Fees (non-TSC	(A)	2,150,824	ton		\$92,485,453
Tipping Fees (TSCA)		251,896	ton		\$13,854,254
	Direct Capital:				\$198,814,392
	Engineering, Procurement & Constr	ruction Managem	ent:		23,857,727
	Total Capital:				\$222,700,000
		INSTITUTIO	NAL CONT	ROLS	
Capital Items		Quantity	Units		Cost
Deed Restrictions		1	LS		\$5,000
	Direct Capital:				\$5,000
	Engineering, Procurement & Constr	ruction Managem	ent:		600
	Total Capital:				\$5,600
Present Worth o	f Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring			40	\$300,000	\$4,513,889
	Total Present Worth, Longer Term (O&M Costs			\$4,513,889
	Total Project Capital and O&M (Cost			\$4,500,000
		BAYPORT	CLOSURE		
Capital Items		Quantity	Units		Cost
Clean Soil Cap		2,178,000	cy		\$21,780,000
Seeding		2,178,000	sy		\$2,178,000
Mitigation		450	acre		\$4,500,000
	Present Worth of Direct Capital:				\$2,766,749
	Engineering, Procurement & Constr	ruction Managem	ent:		\$332,010
	Total Capital:				\$3,098,759
Present Worth o	f Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	972	\$14,628
Long-term Monitoring Long-term O&M			40 40	63,194 6,025	\$950,842 \$90,659
Long term occur			40	0,023	
	Total Present Worth, Longer Term (O&M Costs			\$1,056,130
	Total Project Capital and O&M (Cost			\$4,200,000
	momus goor				0.400.0
	TOTAL COST				\$403,900,000

BASIS FOR PRELIMINARY COST ESTIMATES

SEDIMENT REMEDIATION FOX RIVER, WISCONSIN

DE PERE TO GREEN BAY Action Level - 500 ppb

Material Handling Assumptions:	6 160 459	cv 1083 ac	4 700 510 m2	A area corresponds to dradge
Volume > 500 ppb Volume > 125 ppb	6,169,458 c 6,868,500 c	•	4,709,510 m3 5,243,130 m3	Acres corresponds to dredge footprint area
Volume > 250 ppb	6,449,065	•	4,922,950 m3	iootprint area
Volume > 1,000 ppb	5,879,529	•	4,488,190 m3	
Volume > 5000 ppb	4,517,391	·	3,448,390 m3	
Volume > 50,000 ppb	240,778		183,800 m3	
Solids Specific Gravity	2.36			
Fresh Water Density	62.4 1	lb/ft3		
In Situ Density	33.8% v	w/w 17.8% v/v	1.05 tons per cy	
Slurry Density (20% in situ)	8.0% v		0.88 tons per cy	Ogden Beeman
Dewatered Density (settling pond)	30% v		1.02 tons per cy	Montgomery Watson
Dewatered Density (Hydraulic Dredging and CDF)	50.0% v		1.18 tons per cy	Foth & VanDyke
Dewatered Density (Mechanical Dredging)	33.8% \		1.05 tons per cy	
Treated Density	93.4% \		1.28 tons per cy	
CDF Capacity HTTD Treatment Capacity	2,136,771 c 1,577,177 c		974,801 m3 1,650,000 tons	
Cap Volume	1,926,748	•	1,470,800 m3	
Vitrification Treatment Capacity	9,106,166	•	6440000.00 tons	
Viamental Treatment Capacity	7,100,100	cy m situ	0440000.00 tons	
Cost Estimating Parameters & Methodology:				
Interest Rate	6.0%			
Sales Tax	5.5%			Not Used
Engineering, Procurement and Construction Mgmt	12.0%			
Contractor Overhead and Profit - Dredging Only	15.0%			
Dredging Dredge Manitoring (Water Quality)	\$3,000 r	4		
Dredge Monitoring (Water Quality) Sediment Removal QA	\$1,200 p	. ,		
Debris Sweep	\$16,000 p			Ogden Beeman
Hydraulic - 2 12-inch Cutterheads	\$10,000 p	per acre		Oguen Beeman
Site Preparation	\$803,400 I	I S		Ogden Beeman
Mobilization - Equipment	\$1,135,000 I			Ogden Beeman
Mobilization - Silt Curtain	\$35,000			Ogden Beeman
Shift Rate (12 hours)	\$14,200 p	per shift		Ogden Beeman
Dredge Rate		cy in situ per 12 hour shift		Ogden Beeman
Winter Over Equipment	\$285,000 p	per year		Ogden Beeman
Site Restoration	\$600,000 p	per dredge launch site		
Length of Piping	95,000 f	ft	18 mi	Distance to Town of Holland (map
				provided by Fred Swed). 11 mi of
				hard piping plus 7 mi of floating
District Development of the Control	0.45	0		pipe
Piping Purchase/Installation	\$67 p			Ogden Beeman
Number of Road Crossings	12 6			pj, review map
Cost per Road Crossing		per crossing each		pj, review map
Number of Booster Pumps Booster Pump Cost	\$2,500 µ			Ogden Beeman Ogden Beeman
Mechanical - 8 cy bucket	\$2,500	per day		Ogden Beeman
Dock Construction	\$400,000 I	LS		pj
Mobilization - Equipment	\$455,000 r			Ogden Beeman
Mobilization - Silt Curtain	\$35,000 I	LS		Ogden Beeman
Mobilization - Watertight Barge	\$100,000 €			Ogden Beeman - JAG estimate
Shift Rate (10 hours)	\$17,000 p	per shift		Ogden Beeman
Dredge Rate	1900	cy in situ per 10 hour shift		Ogden Beeman
Offload Stockpile Area Prep.	\$75,000 p			pj
Free Water per cy Dredged (10%)	20 ջ	gal		Ogden Beeman
Offload Crane Mobilization	\$50,000 I			pj
Site Restoration	\$500,000 I	LS		pj
High Temperature Thermal Desorption				
Setup Staging Area	\$50,000			pj M
Mobilization/Site Prep	\$150,000	nor ton		Maxymillian
Sediment Treatment QA		per ton		
Ratio of Amending Sand Volume to Dredge Vol. Sand Purchase and Deliver	0.25 :	per ton		Ole
Blending		per ton		Ole
HTTD (includes off-gas treatment)		per ton		Maxymillian
Stack Testing	\$50,000 I			Maxymillian
Place Treated Material		per ton		
Vitrification	\$5 F	r · · · · · ·		
Capital Costs	\$36,000,000 I	LS		Unit Cost Study- Minergy
Operating Costs	\$6,800,000 p			Unit Cost Study- Minergy
Vitrification (Unit Cost includes Cap and Oper Costs)	\$24.0			Unit Cost Study- Minergy
/				

Capping					
Mobilization/Site Prep	\$200,000	-£	1 070 400	2	Ogden Beeman
Area Sand Cap Depth	20,132,328	feet	1,870,400	m2	
Sand Purchase		per ton			Ole
Placement Rate	\$6	per cy			Ogden Beeman
Sand Density		tons per cy			
Armored Cap Depth Cobbles		feet per cy			Means
Sand Density		tons per cy			ivicans
Cap Placement QA	\$100,000				Ogden Beeman
Long-term O&M		of capital			pj
Long-term Monitoring	\$400,000	per year			Anne LTM
Nearshore CDF Land Lease or Purchase	¢1.00		Bayport		n-i-d
Land Lease of Purchase Length	9,600	per sf			Baird Baird
Capping Volume	205,000		2,178,000		Baird
Seeding Area	300,000		2,178,000		Baird
Sheetpile Wall Length	9,600		y y		based on bathymetry
Sheetpile Depth	30				рj
Sheetpile Cost		per sf			Baird
Shot Rock Berm		per lf			Baird
Rip Rap		per lf			pj Deind
Clean Soil Cap Seeding		per cy per sy			Baird Baird
Mitigation		per acre			Tim
·······ganton		per year			Tim
Long-term Monitoring	\$650,000				Anne LTM
Long-term O&M		of capital			pj
Solidification					
Percent Lime		(w/w)		0.5	Montgomery Watson
Lime	\$60	per ton	Mixing	\$25 per ton	pj, pug mill mixing
Dewatering - Mechanical					
Mobilization	\$100,000				pj
Holding Pond-Centrifuge		per bone dry ton			Global Dewatering
Dewatering - Upland Pond (2 cells)					
Land Lease or Purchase		per sf			Ole
Area	4,491,228	sf	103.10		2 days slurry + 13 wk solids * 2
Perimeter	8,477	1f	2119.251741		cells * 2 shifts per day assume square
Depth of Material in Dewatering Cell		feet	2119.231741		based on size at Arrowhead Park
Cell Retention Time		hours			Not Used
Cell Depth		feet			
Mobilization	\$20,000	LS			
Clear and Grub		per acre			рj
Berm Volume		cy per lf			2:1 slope, 8-foot top
Berm Construction		per cy			pj
Rough Grading		per sf per sf			pj ni 2.2 inah lifta
Alphalt Liner Demob/Disposal	\$10,000				pj, 2 2-inch lifts pj
Regrade Berm Soils		per cy			pj
Seed/Sod		per sy			Baird
Water Treatment					
Flow Rate (3 Mechanical Dredges)		gpm			assume operate 24/7
Unit, Purchase (3 Mechanical Dredges)	\$216,590				pj
Flow Rate (3 Mechanical Dredges to CDF) Unit, Purchase (3 Mechanical Dredges to CDF)	\$570,498	gpm			assume operate 24/7
Flow Rate (2 Hydraulic Dredges)	3,563				pj assume operate 24/7
Unit, Purchase (Hydraulic Dredge)	\$2,586,470				pj
Flow Rate (2 Hydraulic Dredges; settling pond)	3,110				assume operate 24/7
Flow Rate (mechanical dewatering)	3,563	gpm			
Unit, Purchase (mechanical dewatering)	\$2,586,470				
Water Treatment (Including Operator)		per 1,000 gallons	S		pj
Water Treatment QA	\$200 20,000	per day			pj, 1 sample/day Distance from town of Holland to
Length of piping for treated water discharge	20,000	ieet			river per map provided by Fred
<u>Disposal</u>					Swed
Existing NR 500 Commercial Disposal Facility					
Load Soil for Hauling	\$2.80	per ton			pj
Round-trip Hauling	2	hours			pj
Round-trip Hauling (to Vitrification Facility)		hours			pj
Tipping Fee (non-TSCA)		per ton			St. Paul
Tipping Fee (TSCA)		per ton			St. Paul
Truck Rate Truck Load		per hour tons			pj pi
Conveyer System Construction	1,000,000				pj pj
New Landfill Disposal (Dedicated NR 500 Monofill)	1,000,000				PJ
Landfill Construction	\$23,343,896				
Local Siting Fee		per cy			
Closure Cap	\$100,000				
Operating Cost	\$500,000				
Post-closure Monitoring	\$30,000	per year			

Institutional Controls		
Public Education Program	\$100,000	рj
O&M Plans	\$20,000	рj
Deed Restrictions	\$5,000	рj
Annual Costs		
Public Education Program	\$30,000	pj
Maintaining O&M Plans	\$800	рj
Reporting	\$20,000	рj
Long-term Monitoring	\$600,000	Anne LTM
Long-term Monitoring (no action)	\$300,000	Anne LTM

ALTERNATIVE A: No Action

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Constru	ction Managem	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth of Long-term Monitoring	of Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term O	&M Costs			\$4,513,889
	Total Project Capital and O&M Co	ost			\$4,500,000
	TOTAL COST				\$4,500,000

ALTERNATIVE B: Monitored Natural Recovery

MONITORING/INSTITUTIONAL CONTROLS

Capital Items	Quantity	Units		Cost
Public Education Program	1	LS		\$100,000
O&M Plans	1	LS		\$20,000
Deed Restrictions	1	LS		\$5,000
Direct Capital:				\$125,000
Engineering, Procurement & C	Construction Managem	ent:		15,000
Total Capital:				\$140,000
Present Worth of Longer Term Operating Cos	ets	Years	Annual Cost	
Long-term Monitoring		40	\$600,000	\$9,027,778
Public Education Program		40	\$30,000	\$451,389
Maintaining O&M Plans		40	\$800	\$12,037
Reporting		40	\$20,000	\$300,926
Total Present Worth, Longer	Γerm O&M Costs			\$9,792,130
Total Project Capital and O	&M Cost			\$9,900,000
TOTAL COST				\$9,900,000

ALTERNATIVE C1: Dredge Sediment With Disposal at Existing NR 500 Commercial Disposal Facility (Passive Dewatering)

SEDIMENT REMOVAL (MECHANICAL DREDGING)

Capital Items	Quantity	Units		Cost
Mobilization - Equipment and Silt Curtain	3	LS		\$1,470,000
Watertight Barges	4	ea		\$400,000
Offload Stockpile Area Prep.	1	LS		\$75,000
Dredging - 12 hour shifts	3,248	Day	24.98461538	\$55,216,000
Dredge Monitoring (Water Quality)	3,248	Day		\$9,744,000
Sediment Removal QA	3,248	Day		\$3,897,600
Offload Crane Mobilization	1	LS		\$50,000
Site Restoration	1	ea		\$500,000
Direct Capital:				\$71,352,600
Engineering, Procurement & C	Construction Managem	ent:		8,562,312
Contractor Overhead/Profit:				10,702,890
Total Capital:				\$90,600,000

WATER TREATMENT

Capital Items Unit Purchase		Quantity 57	Units gpm		Cost \$216,590
Water Treatment (Inclu Water Treatment QA	ndes Operator)	124,598,376 1,516	gal day		\$49,839 \$303,200
	Direct Capital: Engineering, Procurement & Const	truction Manageme	ent:		\$569,629 68,355
	Total Capital:				\$600,000
	SEDIMENT DISPOSA	AL (Existing N	R 500 Comm	nercial Disposal Facility)	
Capital Items		Quantity	Units		Cost
Solidification		6,454,322	ton		\$161,358,055
Lime Purchase		645,433	ton		\$38,725,980
Soil Loading		6,454,322	ton		\$18,072,102
Soil Hauling	•	6,454,322	ton		\$30,254,635
Tipping Fees (non-TSC	CA)	6,202,427	ton		\$266,704,347
Tipping Fees (TSCA)		251,896	ton		\$13,854,253
	Direct Capital: Engineering, Procurement & Cons	truction Managem	ent:		\$528,969,373 63,476,325
	Total Capital:				\$592,400,000
		INSTITUTIO	NAL CONT	ROLS	
Capital Items		Quantity	Units		Cost
Deed Restrictions		1	LS		\$5,000
	Direct Capital: Engineering, Procurement & Const	truction Manageme	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth of Long-term Monitoring	of Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term	O&M Costs			\$4,513,889
	Total Project Capital and O&M	Cost			\$4,500,000
		BAYPORT	CLOSURE		
Capital Items		Quantity	Units		Cost
Clean Soil Cap		2,178,000	cy		\$21,780,000
Seeding		2,178,000	sy		\$2,178,000
Mitigation		450	acre		\$4,500,000
	Present Worth of Direct Capital: Engineering, Procurement & Const	truction Manageme	ent:		\$2,766,749 \$332,010
	Total Capital:				\$3,098,759
	of Longer Term Operating Costs		Years	Annual Cost	
Mitigation Long-term Monitoring Long-term O&M			40 40 40	972 63,194 6,025	\$14,628 \$950,842 \$90,659
	Total Present Worth, Longer Term	O&M Costs			\$1,056,130
	Total Project Capital and O&M	Cost			\$4,200,000
	TOTAL COST				\$692,300,000

ALTERNATIVE C2A: Dredge Sediment with Combined Dewatering and Disposal Facility

SEDIMENT REMOVAL (2 12-INCH CUTTERHEADS)

	SEDIMENT	REMOVAL (2	12-INCH C	UTTERHEADS)	
Capital Items		Quantity	Units		Cost
Site Preparation		2	LS		\$1,606,800
Mobilization - Equipm	nent and Silt Curtain	1	LS		\$1,170,000
Debris Sweep		1083	acre		\$17,328,000
Dredging - 2 12 hour s	hifts/day	1070	Day	5.879120879	\$30,388,000
Dredge Monitoring (W		1070	Day		\$6,420,000
Sediment Removal QA		1070	Day		\$2,568,000
Piping		95,000	ft		\$6,365,000
Road Crossings		12	ea		\$600,000
Booster Pumps		4	ea		\$10,700,000
Winter Over All Equip	oment	6	yr		\$1,710,000
Site Restoration		1	LS		\$600,000
	Direct Capital:				\$79,455,800
	Engineering, Procurement & Con	struction Manageme	nt:		9,534,696
	Contractor Overhead/Profit:				11,918,370
	Total Capital:				\$100,900,000
	Total Capital.				3100,500,000
		WATER TR	EATMENT	Γ	
Capital Items		Quantity	Units		Cost
Unit Purchase		3,563	gpm		\$2,586,470
Water Treatment (Incl	uding Operator)	5,485,286,920	gal		\$2,194,115
Water Treatment QA		1,070	Day		\$428,000
Piping		20,000	ft		\$1,340,000
	Direct Capital:				\$6,548,584
	Engineering, Procurement & Con	struction Manageme	nt:		785,830
	Total Capital:				\$7,300,000
	SEDIMENT	Γ DISPOSAL (D	edicated NI	R 500 Monofill)	
	SEDIMEN	DISTOSTIE (E	realcated 111	N 300 Monomy	
Capital Items		Quantity	Units		Cost
Landfill Construction		1	LS		\$23,343,896
Local Siting Fee		3,687,026	cy		\$18,435,132
Closure		114	acres		\$11,426,735
					,*=*,
	Direct Capital:				\$53,205,763
		-tti M	4-		
	Engineering, Procurement & Con	struction Manageme	nt:		6,384,692
	Total Capital:				\$59,600,000
Present Worth	of Longer Term Operating Costs		Years	Annual Cost	
Operations	or non-general services and services		10	\$500,000	\$3,680,044
Post Closure Monitori	ng		40	\$30,000	\$252,053
	Total Present Worth, Longer Terr	n O&M Costs			\$3,932,097
	Total Project Capital and O&M	I Cost			\$63,500,000
		INCTITUTIO	NAL CONT	TROL C	
		INSTITUTIO	NAL CONT	IKOLS	
Capital Items		Quantity	Units		Cost
Deed Restrictions		1	LS		\$5,000
	Direct Capital:				\$5,000
	Engineering, Procurement & Con	struction Manageme	nt:		600
	Total Capital:				\$5,600
·	AV		• ,		
	of Longer Term Operating Costs		Years	Annual Cost	04.512.000
Long-term Monitoring	(по асиоп)		40	\$300,000	\$4,513,889
	Total Present Worth, Longer Terr	n O&M Costs			\$4,513,889
	Toma Trosone Worth, Longer Tell				7,007 روز کر به پ
	Total Project Capital and O&M	I Cost			\$4,500,000

BAYPORT CLOSURE

Capital Items		Quantity	Units		Cost
Clean Soil Cap		2,178,000	cy		\$21,780,000
Seeding		2,178,000	sy		\$2,178,000
Mitigation		450	acre		\$4,500,000
	Present Worth of Direct Capital:				\$2,766,749
	Engineering, Procurement & Constr	ruction Managem	ent:		\$332,010
	Total Capital:				\$3,098,759
Present Worth o	f Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	972	\$14,628
Long-term Monitoring			40	63,194	\$950,842
Long-term O&M			40	6,025	\$90,659
	Total Present Worth, Longer Term	O&M Costs			\$1,056,130
	Total Project Capital and O&M (Cost			\$4,200,000
	TOTAL COST				\$176,500,000
ALTERNATIVE C2B	: Dredge Sediment with Sepa	rate Dewateri	ng and Dispo	osal Facilities	

ALTERNATIVE C2B: Dredge Sediment with Separate Dewatering and Disposal Facilities

Total Capital:

SEDIMENT REMOVAL (2 12-INCH CUTTERHEADS)

Capital Items	Quantity	Units		Cost
Site Preparation	2	LS		\$1,606,800
Mobilization - Equipment and Silt Curtain	1	LS		\$1,170,000
Debris Sweep	1083	acre		\$17,328,000
Dredging - 2 12 hour shifts/day	1070	Day	5.879120879	\$30,388,000
Dredge Monitoring (Water Quality)	1070	Day		\$6,420,000
Sediment Removal QA	1070	Day		\$2,568,000
Piping	95,000	ft		\$6,365,000
Road Crossings	12	ea		\$600,000
Booster Pumps	4	ea		\$10,700,000
Winter Over All Equipment	6	yr		\$1,710,000
Site Restoration	1	LS		\$600,000
Direct Capital:				\$79,455,800
Engineering, Procurement &	9,534,696			
Contractor Overhead/Profit:	Č			11,918,370

SEDIMENT DEWATERING (GRAVITY - NR 213)

Capital Items	Quantity	Units	Cost
Land Lease or Purchase	4,491,228	sf	\$8,084,210
Mobilization	1	LS	\$20,000
Clear and Grub	4,491,228	sf	\$206,209
Berm Construction	87,910	cy	\$527,458
Rough Grading	4,491,228	sf	\$1,122,807
Liner Placement	4,491,228	sf	\$6,736,842
Demob/Disposal	1	LS	\$10,000
Regrade	87,910	cy	\$527,458
Seed/Sod	499,025	sy	\$499,025
	Direct Capital:		\$17,734,010
	Engineering, Procurement & Construction Manager	nent:	2,128,081

Total Capital: \$19,900,000

WATER TREATMENT

Capital Items	Quantity	Units	Cost
Unit Purchase	3,110	gpm	\$2,586,470
Water Treatment (Including Operator)	4,787,933,264	gal	\$1,915,173
Water Treatment QA	1,070	Day	\$428,000
Piping	20,000	ft	\$1,340,000
Direct Capital:			\$6,269,643
Engineering, Procurement	& Construction Manageme	nt:	752,357
Total Capital:			\$7,000,000

\$100,900,000

SEDIMENT DISPOSAL (Dedicated NR 500 Monofill)

Capital Items	Quant	-			Cost
Solidification Lime Purchase	7,271,8 727,18				\$181,796,742 \$43,631,220
Sediment Loading	7,271,8				\$20,361,235
Sediment Hauling	7,271,8				\$34,086,889
Landfill Construction	1	L			\$23,343,896
Local Siting Fee	3,687,0	026 c	y		\$18,435,132
Closure	114				\$11,426,735
	Direct Capital:				\$333,081,849
	Engineering, Procurement & Construction Ma	nagement:			39,969,822
	Total Capital:				\$373,100,000
Present Worth	of Longer Term Operating Costs	Yea	ırs	Annual Cost	
Operations			10	\$500,000	\$3,680,044
Post Closure Monitori	ng		40	\$30,000	\$252,053
	Total Present Worth, Longer Term O&M Cost	ts			\$3,932,097
	T. ID. I. IG. II. 100MG				
	Total Project Capital and O&M Cost				\$377,000,000
	INSTITUT	TIONAL C	ONTR	OLS	
Capital Items	Quant	tity Un	its		Cost
Deed Restrictions	1	L			\$5,000
	Pi G . i. i				45.000
	Direct Capital: Engineering, Procurement & Construction Ma.	nagement:			\$5,000 600
	Total Capital:				\$5,600
Present Worth	of Longer Term Operating Costs	Yea	ırs	Annual Cost	
Long-term Monitoring			40	\$300,000	\$4,513,889
	Total Present Worth, Longer Term O&M Cost	te			\$4,513,889
	Total Tresent Worth, Longer Term Occivi Cost				ψ4,515,007
	Total Project Capital and O&M Cost				\$4,500,000
	BAYP	ORT CLO	SURE		
Capital Items	Quant	tity Un	its		Cost
Clean Soil Cap	2,178,0		y		\$21,780,000
Seeding Mitigation	2,178,0 450				\$2,178,000
Mitigation	430	ac	ie		\$4,500,000
	Present Worth of Direct Capital: Engineering, Procurement & Construction Ma	nagement:			\$2,766,749 \$332,010
	Total Capital:				\$3,098,759
Dungant W		V		Annual Cost	
Mitigation Present Worth	of Longer Term Operating Costs	Yea	ars 40	Annual Cost 972	\$14,628
Long-term Monitoring	3		40	63,194	\$950,842
Long-term O&M			40	6,025	\$90,659
	Total Present Worth, Longer Term O&M Cost	ts			\$1,056,130
	Total Ducient Canital J O 9 M C- /				£4.200.000
	Total Project Capital and O&M Cost				\$4,200,000
	TOTAL GOOT				
	TOTAL COST				\$513,500,000

ALTERNATIVE C3: Dredge Sediment With Disposal at Existing NR 500 Commercial Disposal Facility (Mechanical Dewatering)

SEDIMENT REMOVAL (2 - 12-inch CUTTERHEADS)

Capital Items	Quantity	Units		Cost
Site Preparation	2	LS		\$1,606,800
Mobilization - Equipment and Silt Curtain	1	LS		\$1,170,000
Debris Sweep	1083	acre		\$17,328,000
Dredging - 2 12 hour shifts/day	1070	Day	5.879120879	\$30,388,000
Dredge Monitoring (Water Quality)	1070	Day		\$6,420,000
Sediment Removal QA	1070	Day		\$2,568,000
Winter Over All Equipment	6	yr		\$1,710,000
Site Restoration	1	LS		\$600,000
Direct Capital:				\$61,790,800
Engineering, Procurement & Cons	struction Managem	ent:		7,414,896
Contractor Overhead/Profit:	· ·			9,268,620
Total Capital:				\$78,500,000

SEDIMENT DEWATERING (MECHANICAL)

Capital Items Mobilization/Site Prep Dewatering	Quantity 1 2,181,561	Units LS bdt	Cost \$100,000 \$174,524,872
	Direct Capital:		\$174,624,872
	Engineering, Procurement & Construction Managen	ent:	20,954,985
	Total Capital:		\$195,600,000

WATER TREATMENT

Capital Items	Quantity	Units	Cost
Unit Purchase	3,563	gpm	\$2,586,470
Water Treatment (Includes Operator)	5,485,286,920	gal	\$2,194,115
Water Treatment QA	2,994	day	\$598,800
Direct Capital:			\$5,379,384
Engineering, Procuremen	t & Construction Managemen	nt:	645,526
Total Capital:			\$6,000,000

SEDIMENT DISPOSAL (Existing NR 500 Commercial Disposal Facility)

Capital Items		Quantity	Units	Cost
Soil Loading		4,363,122	ton	\$12,216,741
Soil Hauling		4,363,122	ton	\$20,452,133
Tipping Fees (non-TSCA	A)	4,192,840	ton	\$180,292,139
Tipping Fees (TSCA)		170,281	ton	\$9,365,475
	Direct Capital:			\$222,326,488
	Engineering, Procurement & Construct	ion Managem	ent:	26,679,179
	Engineering, Freedrenien & Constituti	.on managem		20,017,117
	Total Capital:			\$249,000,000

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Construc	ition Managama	nt:		\$5,000 600
	Total Capital:	tion Manageme	iit.		\$5,600
Present Worth	of Longer Term Operating Costs		Years	Annual Cost	30,000
Long-term Monitoring			40	\$300,000	\$4,513,889
	Total Present Worth, Longer Term O&	kM Costs			\$4,513,889
	Total Project Capital and O&M Co	st			\$4,500,000

BAYPORT CLOSURE

Capital Items Clean Soil Cap Seeding Mitigation		Quantity 2,178,000 2,178,000 450	Units cy sy acre		Cost \$21,780,000 \$2,178,000 \$4,500,000 \$2,766,749 \$332,010
	Total Capital:				\$3,098,759
Present Worth of Mitigation Long-term Monitoring Long-term O&M	Longer Term Operating Costs		Years 40 40 40	Annual Cost 972 63,194 6,025	\$14,628 \$950,842 \$90,659
	Total Present Worth, Longer Term O&	M Costs			\$1,056,130
					4-,,,,,,
	Total Project Capital and O&M Cos	t			\$4,200,000
ALTERNATIVE D: D	TOTAL COST redge Sediment, CDF and Off-s	site Disposa	I		\$537,800,000

SEDIMENT REMOVAL (MECHANICAL DREDGING)

Capital Items	Quantity	Units	Cost
Mobilization - Equipment and Silt Curtain	3	LS	\$1,470,000
Watertight Barges	4	ea	\$400,000
Offload Stockpile Area Prep.	1	LS	\$75,000
Dredging - 12 hour shifts	3,248	Day	\$55,216,000
Dredge Monitoring (Water Quality)	3,248	Day	\$9,744,000
Sediment Removal QA	3,248	Day	\$3,897,600
Offload Crane Mobilization	1	LS	\$50,000
Site Restoration	1	ea	\$500,000
Direct Capital:			\$71,352,600
Engineering, Procurement & C	Construction Managem	ent:	8,562,312
Contractor Overhead/Profit:			10,702,890
Total Capital:			\$90,600,000

CDF CONSTRUCTION

Capital Items	Quantity	Units	Cost
Land Lease or Purchase	2,700,000	sf	\$4,860,000
Shot Rock/Rip Rap	9,600	lf	\$6,816,000
Sheetpile Placement	288,000	sf	\$5,472,000
Clean Soil Cap	205,000	cy	\$2,050,000
Seeding	300,000	sy	\$300,000
Mitigation	62	acre	\$619,835
Direct Capital:			\$20,117,835
Engineering, P	Procurement & Construction Manageme	ent:	\$2,414,140

Total Capital: \$22,531,975

Fresent worth of Longer Term Operating Costs	rears	Alliuai Cost	
Mitigation	40	10,000	\$150,463
Long-term Monitoring	40	650,000	\$9,780,093
Long-term O&M	40	450,639	\$6,780,456

Total Present Worth, Longer Term O&M Costs \$16,711,012

Total Project Capital and O&M Cost \$39,200,000

WATER TREATMENT

Capital Items	Quantity	Units	Cost
Unit Purchase	287	gpm	\$570,498
Water Treatment (Includes Operator)	298,239,928	gal	\$119,296
Water Treatment QA	1,516	day	\$303,200
Direct Capital:			\$992,994
Engineering, Procurement & Construction Management:			119,159
Total Capital:			\$1,100,000

SEDIMENT DISPOSAL (Existing NR 500 Commercial Disposal Facility)

Capital Items	Quantity	Units	Cost
Solidification	4,218,890	ton	\$105,472,250
Lime Purchase	421,889	ton	\$25,313,340
Soil Loading	4,218,890	ton	\$11,812,892
Soil Hauling	4,218,890	ton	\$19,776,047
Tipping Fees (non-TSCA)	3,966,994	ton	\$170,580,761
Tipping Fees (TSCA)	385,366	ton	\$21,195,108
Direct Capital:			\$354,150,398
Engineering, Procur	ement & Construction Managem	ent:	42,498,048
Total Capital:			\$396,600,000

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Construc	tion Manageme	nt:		\$5,000 600
	Total Capital:				\$5,600
Present Worth of Long-term Monitoring	f Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term O&	kM Costs			\$4,513,889
	Total Project Capital and O&M Co	st			\$4,500,000

BAYPORT CLOSURE

Capital Items		Quantity	Units		Cost
Clean Soil Cap		2,178,000	cy		\$21,780,000
Seeding		2,178,000	sy		\$2,178,000
Mitigation		450	acre		\$4,500,000
	Present Worth of Direct Capital:				\$2,766,749
	Engineering, Procurement & Construct	tion Managem	ent:		\$332,010
	Total Capital:				\$3,098,759
Present Worth o	of Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	972	\$14,628
Long-term Monitoring			40	63,194	\$950,842
Long-term O&M			40	6,025	\$90,659
	Total Present Worth, Longer Term O&	M Costs			\$1,056,130
	Total Project Capital and O&M Cos	st			\$4,200,000

TOTAL COST \$536,200,000

ALTERNATIVE E: Dredge Sediment and Thermal Treatment

SEDIMENT REMOVAL (2 - 12-inch CUTTERHEAD'S)

Capital Items	Quantity	Units		Cost
Site Preparation	2	LS		\$1,606,800
Mobilization - Equipment and Silt Curtain	1	LS		\$1,170,000
Debris Sweep	1083	acre		\$17,328,000
Dredging - 2 12 hour shifts/day	1070	Day	5.879120879	\$30,388,000
Dredge Monitoring (Water Quality)	1070	Day		\$6,420,000
Sediment Removal QA	1070	Day		\$2,568,000
Piping	95,000	ft		\$6,365,000
Road Crossings	12	ea		\$600,000
Booster Pumps	4	ea		\$10,700,000
Winter Over All Equipment	6	yr		\$1,710,000
Site Restoration	1	LS		\$600,000
Direct Capital:				\$79,455,800
Engineering Procurement &	9 534 696			

Engineering, Procurement & Contractor Overhead/Profit: 11,918,370

\$100,900,000 **Total Capital:**

SEDIMENT DEWATERING (GRAVITY)

Mail	Capital Items		Quantity	Units		Cost
Mobilitation	•	9				
Sem Construction		C				
Seri Construction						
Sough						
Seed				-		
Demot Septid S						
Regrade 87.910 by 499.025 by \$499.025 by \$499.00000000000000000000000000000000000						
Direct Capital: S17,734,010 Engineering, Procurement & Construction Management S19,900,000						
Direct Capital: \$17,734,00						
		Direct Capital:				\$17,734,010
Total Capital: S19,900,000		Engineering, Procurement & Const	ruction Manageme	ent:		2,128,081
Capital Items						
Capital Items Quantity Units Cost Unit Purchase 3,110 gpm \$2,586,470 Water Treatment (Including Operator) 4,787,933,264 gal \$1,915,173 Water Treatment QA 1,070 Day \$428,000 Piping 55,050,000 f \$50,365,000 Capital: Engineering, Procurement & Construction Management Total Capital: SEDIMENT TREATMENT (VITRIFICATION 2x375 t Standalone Storage Units) Capital Items Quantity Units Cost Sediment Treatment 7,271,870 ton \$174,524,872 Soil Loading 7,271,870 ton \$20,361,235 Soil Hauling 7,271,870 ton \$85,21,722 Direct Capital: \$227,800,000 \$85,21,722 Capital Items Direct Capital: Secure Capital:		Total Capital:				\$19,900,000
Unit Purchase Water Treatment (Including Operator) 4,787,933,264 gal sl.915,173 water Treatment (Including Operator) 4,787,933,264 gal sl.915,173 water Treatment (Including Operator) \$1,970 Day \$428,000 Sec.900 or ft \$1,970,000 Sec.900 or ft \$1,294,643 Sec.900 or ft <t< td=""><td></td><td></td><td>WATER TR</td><td>EATMENT</td><td></td><td></td></t<>			WATER TR	EATMENT		
Unit Purchase Water Treatment (Including Operator) 4,787,933,264 gal sl.915,173 water Treatment (Including Operator) 4,787,933,264 gal sl.915,173 water Treatment (Including Operator) \$1,970 Day \$428,000 Sec.900 or ft \$1,970,000 Sec.900 or ft \$1,294,643 Sec.900 or ft <t< td=""><td>Canital Items</td><td></td><td>Quantity</td><td>Units</td><td></td><td>Cost</td></t<>	Canital Items		Quantity	Units		Cost
Water Treatment (Including Operator) 4,787,933,264 gal gal \$1,173 by \$1,23 by \$1,230 by \$1,	•		- •			
Water Treatment QA Piping Direct Capital: Engineering, Procurement & Construction Management \$11,294,643 SEDIMENT TREATMENT (VITRIFICATION 2x375 t Standalone Storage Units) Capital Items SEDIMENT TREATMENT (VITRIFICATION 2x375 t Standalone Storage Units) Cost Sediment Treatment Total Capital: Treatment 7,271,870 ton \$174,524,872 Soil Loading 7,271,870 ton \$20,361,235 Soil Hauling Direct Capital: Sengineering, Procurement & Construction Management \$200,407,829 Engineering, Procurement & Construction Management \$227,800,000 Total Capital: Sengineering, Procurement & Construction Management \$227,800,000 Cost Capital Items Deed Restrictions Quantity Units Sengineering, Procurement & Cost Cost Cost Capital: Sengineering, Procurement & Construction Management \$5,000 Direct Capital: Sengineering, Procurement & Construction Management \$5,000 Fresent Worth of Longer Term Operating Costs Incompany (no action) Years Annual Cost Sengineering, Annual Cost Sengineering, Procurement & Construction Management \$5,600 Total Present Worth, Longer Term Operating Costs Years Annual Cost Sengineering, Annual Cost Sengineering, Procurement Sengineering, Procuremen		iding Operator)				
Piping 95,000 ft \$6,365,000		3 - F /				
Total Capital: S12,700,000						
Total Capital: S12,700,000						
Total Capital: S12,700,000		Direct Capital:				\$11,294,643
SEDIMENT TREATMENT (VITRIFIC ATION 2x375 t Standalone Storage Units) Capital Items Quantity Units Cost Sediment Treatment 7,271,870 ton \$174,524,872 Soil Loading 7,271,870 ton \$20,361,235 Soil Hauling 7,271,870 ton \$85,21,722 Direct Capital: \$203,407,829 \$223,408,940 Total Capital: \$227,800,000 TOTAL CAPITAL: Cost Capital Items Quantity Units Cost Deed Restrictions 1 LS \$5,000 Engineering, Procurement & Construction Management & Construction Ma		Engineering, Procurement & Const	ruction Manageme	ent:		1,355,357
Capital Items Quantity Units Cost Sediment Treatment 7,271,870 ton \$174,524,872 Soil Loading 7,271,870 ton \$20,361,235 Soil Hauling 7,271,870 ton \$8,521,722 Soil Hauling Direct Capital: \$203,407,829 Engineering, Procurement & Construction Management \$227,800,000 INSTITUTIONAL CONTROLS Capital Items Quantity Units Cost Deed Restrictions 1 LS \$5,000 Direct Capital: \$5,000 Engineering, Procurement & Construction Management \$5,000 600 Total Capital: \$5,000 Present Worth of Longer Term Operating Costs Years Annual Cost Long-term Monitoring (no action) \$4,513,889 Total Present Worth, Longer Term O&M Costs \$4,513,889		Total Capital:				\$12,700,000
Sediment Treatment 7,271,870 ton \$174,524,872 Soil Loading 7,271,870 ton \$20,361,235 Soil Hauling 7,271,870 ton \$8,521,722 Direct Capital: \$203,407,829 Engineering, Procurement & Construction Management: \$224,408,940 Total Capital: \$227,800,000 Capital Items Quantity Units Cost Deed Restrictions 1 LS \$5,000 Direct Capital: \$5,000 Engineering, Procurement & Construction Management: 600 Total Capital: \$5,600 Present Worth of Longer Term Operating Costs Years Annual Cost Long-term Monitoring (no action) 40 \$300,000 \$4,513,889 Total Present Worth, Longer Term O&M Costs \$4,513,889		SEDIMENT TREATMENT	Γ (VITRIFICA	TION 2x375	5 t Standalone Storage Units)
Sediment Treatment 7,271,870 ton \$174,524,872 Soil Loading 7,271,870 ton \$20,361,235 Soil Hauling 7,271,870 ton \$8,521,722 Direct Capital: \$203,407,829 Engineering, Procurement & Construction Management: \$224,408,940 Total Capital: \$227,800,000 Capital Items Quantity Units Cost Deed Restrictions 1 LS \$5,000 Direct Capital: \$5,000 Engineering, Procurement & Construction Management: 600 Total Capital: \$5,600 Present Worth of Longer Term Operating Costs Years Annual Cost Long-term Monitoring (no action) 40 \$300,000 \$4,513,889 Total Present Worth, Longer Term O&M Costs \$4,513,889	Capital Items		Quantity	Units		Cost
Soil Hauling 7,271,870 ton \$8,521,722 \$203,407,829 \$203,407,829 \$203,407,829 \$224,408,940 \$224,408,940 \$224,408,940 \$227,800,000 \$	Sediment Treatment		7,271,870	ton		\$174,524,872
Direct Capital: \$203,407,829 Engineering, Procurement & Construction Management \$224,408,940 Total Capital: \$227,800,000 INSTITUTIONAL CONTROLS Capital Items Quantity Units Cost Deed Restrictions 1 LS \$5,000 Direct Capital: \$5,000 \$5,000 Engineering, Procurement & Construction Management \$600 \$600 Present Worth of Longer Term Operating Costs Years Annual Cost \$4,513,889 Long-term Monitoring (no action) 40 \$300,000 \$4,513,889 Total Present Worth, Longer Term O&M Costs \$4,513,889	Soil Loading		7,271,870	ton		\$20,361,235
Engineering, Procurement & Construction Management: \$24,408,940 Total Capital: \$227,800,000 INSTITUTIONAL CONTROLS Capital Items Deed Restrictions 1 LS S5,000 Direct Capital: \$55,000 Engineering, Procurement & Construction Management: \$55,000 Total Capital: \$55,000 Present Worth of Longer Term Operating Costs Years Annual Cost Long-term Monitoring (no action) 40 \$300,000 \$4,513,889	Soil Hauling		7,271,870	ton		\$8,521,722
Total Capital: INSTITUTIONAL CONTROLS Capital Items Deed Restrictions Direct Capital: Engineering, Procurement & Construction Management: Engineering, Procurement & Construction Management: Engineering, Procurement & Construction Management: Total Capital: S5,000 Present Worth of Longer Term Operating Costs Long-term Monitoring (no action) Years Annual Cost Long-term Monitoring (no action) 40 \$300,000 \$4,513,889		Direct Capital:				\$203,407,829
Total Present Worth, Longer Term O&M Costs INSTITUTIONAL CONTROLS Quantity Units Cost LS \$5,000 1 LS \$5,000 Engineering, Procurement & Construction Management & \$5,000 Engineering, Procurement & Construction Management & \$5,000 Present Worth of Longer Term Operating Costs Long-term Monitoring (no action) 40 \$300,000 \$4,513,889		Engineering, Procurement & Const	ruction Manageme	ent:		\$24,408,940
Capital Items Quantity Units Cost Deed Restrictions 1 LS \$5,000 Direct Capital: \$5,000 Engineering, Procurement & Construction Management: 600 Total Capital: \$5,600 Present Worth of Longer Term Operating Costs Years Annual Cost Long-term Monitoring (no action) 40 \$300,000 \$4,513,889 Total Present Worth, Longer Term O&M Costs \$4,513,889		Total Capital:				\$227,800,000
Deed Restrictions 1 LS \$5,000 Direct Capital: Engineering, Procurement & Construction Management: \$5,000 Total Capital: \$5,600 Present Worth of Longer Term Operating Costs Years Annual Cost Long-term Monitoring (no action) 40 \$300,000 \$4,513,889 Total Present Worth, Longer Term O&M Costs \$4,513,889		IN	NSTITUTION A	AL CONTRO	DLS	
Deed Restrictions 1 LS \$5,000 Direct Capital: Engineering, Procurement & Construction Management: \$5,000 Total Capital: \$5,600 Present Worth of Longer Term Operating Costs Years Annual Cost Long-term Monitoring (no action) 40 \$300,000 \$4,513,889 Total Present Worth, Longer Term O&M Costs \$4,513,889						
Direct Capital: \$5,000 Engineering, Procurement & Construction Management: \$600 Total Capital: \$55,600 Present Worth of Longer Term Operating Costs Years Annual Cost Long-term Monitoring (no action) 40 \$300,000 \$4,513,889 Total Present Worth, Longer Term O&M Costs \$4,513,889						
Engineering, Procurement & Construction Management: 600 Total Capital: \$5,600 Present Worth of Longer Term Operating Costs Years Annual Cost Long-term Monitoring (no action) 40 \$300,000 \$4,513,889 Total Present Worth, Longer Term O&M Costs \$4,513,889	Deed Restrictions		1	LS		\$5,000
Total Capital: \$5,600 Present Worth of Longer Term Operating Costs Years Annual Cost Long-term Monitoring (no action) 40 \$300,000 \$4,513,889 Total Present Worth, Longer Term O&M Costs \$4,513,889						
Present Worth of Longer Term Operating Costs Long-term Monitoring (no action) Total Present Worth, Longer Term O&M Costs Years 40 \$300,000 \$4,513,889		Engineering, Procurement & Const	ruction Manageme	ent:		600
Long-term Monitoring (no action) 40 \$300,000 \$4,513,889 Total Present Worth, Longer Term O&M Costs \$4,513,889		Total Capital:				\$5,600
Total Present Worth, Longer Term O&M Costs \$4,513,889						Ø4.512.000
	Long-term Monitoring	(IIO action)		40	\$500,000	\$4,313,889
Total Project Capital and O&M Cost \$4,500,000		Total Present Worth, Longer Term	O&M Costs			\$4,513,889
		Total Project Capital and O&M	Cost			\$4,500,000

BAYPORT CLOSURE

Capital Items Clean Soil Cap Seeding Mitigation		Quantity 2,178,000 2,178,000 450	Units cy sy acre		Cost \$21,780,000 \$2,178,000 \$4,500,000
	Present Worth of Direct Capital: Engineering, Procurement & Constru	uction Managem	ent:		\$2,766,749 \$332,010
	Total Capital:				\$3,098,759
Present Worth	of Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	972	\$14,628
Long-term Monitoring			40	63,194	\$950,842
Long-term O&M			40	6,025	\$90,659
	Total Present Worth, Longer Term C	D&M Costs			\$1,056,130
	Total Project Capital and O&M C	Cost			\$4,200,000
	TOTAL COST				\$370,000,000

ALTERNATIVE F: Cap Sediment to Maximum Extent Possible, Dredge to CDF and Off-site Disposal

CDF CONSTRUCTION

Capital Items		Quantity	Units		Cost
Land Lease or Purchas	e	2,700,000	sf		\$4,860,000
Shot Rock/Rip Rap		9,600	lf		\$6,816,000
Sheetpile Placement		288,000	sf		\$5,472,000
Clean Soil Cap		205,000	cy		\$2,050,000
Seeding		300,000	sy		\$300,000
Mitigation		62	acre		\$619,835
	Direct Capital:				\$20,117,835
	Engineering, Procurement & Const	ruction Managem	ent:		\$2,414,140
	Total Capital:				\$22,531,975
Present Worth	of Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	10,000	\$150,463
Long-term Monitoring			40	650,000	\$9,780,093
Long-term O&M			40	450,639	\$6,780,456
	Total Present Worth, Longer Term	O&M Costs			\$16,711,012
	Total Project Capital and O&M	Cost			\$39,200,000

CAPPING

Capital Items		Quantity	Units		Cost
Mobilization/Site Prep		1	LS		\$200,000
Sand Purchase		1,739,831	tons		\$10,438,985
Sand Placement		1,242,736	cy		\$7,456,418
Cobble Purchase and P	lacement	745,642	cy		\$22,369,254
Cap Placement QA		1	LS		\$100,000
	Direct Capital:				\$40,564,657
	Engineering, Procurement & Constr	uction Managem	ent:		4,867,759
	Total Capital:				\$45,432,416
Present Worth of Monitoring/O&M	of Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring			40	\$400,000	\$6,018,519
Long-term O&M			40	\$908,648	\$13,671,792
	Total Present Worth, Longer Term C	O&M Costs			\$19,690,311
	Total Project Capital and O&M C	Cost			\$65,100,000

SEDIMENT REMOVAL (MECHANICAL DREDGING)

	SEDIMEN	REMOVAL	(MECHANI	CAL DREDGING)	
Capital Items		Quantity	Units		Cost
Mobilization - Equipm	ent and Silt Curtain	3	LS		\$1,470,000
Watertight Barges		4	ea		\$400,000
Offload Stockpile Area	Prep.	1	LS		\$75,000
Dredging - 12 hour shi		2,233	Day		\$37,961,000
Dredge Monitoring (W		2,233	Day		\$6,699,000
Sediment Removal QA		2,233	Day		\$2,679,600
Offload Crane Mobiliz Site Restoration	ation	1 1	LS ea		\$50,000 \$500,000
Site Restoration		1	Ca		\$300,000
	Direct Capital:				\$49,834,600
	Engineering, Procurement & Const	truction Managem	ent:		5,980,152
	Contractor Overhead/Profit:				7,475,190
	Total Capital:				\$63,300,000
		WATER	TREATME	NT	
Capital Items		Quantity	Units		Cost
Unit Purchase		287	gpm		\$570,498
Water Treatment (Inclu	ides Operator)	259,327,325	gal		\$103,731
Water Treatment QA		1,516	day		\$303,200
	Direct Capital: Engineering, Procurement & Const	truction Managem	ent [.]		\$977,429 117,291
	Total Capital:				\$1,100,000
	SEDIMENT DISPOSA	AL (Existing N	R 500 Comr	nercial Disposal Facility)	
Capital Items		Quantity	Units		Cost
Solidification		-			
		2,203,177	ton		\$55,079,425
Lime Purchase		220,318	ton		\$13,219,080
Soil Loading		2,203,177	ton		\$6,168,896
Soil Hauling		2,203,177	ton		\$10,327,392
Tipping Fees (non-TSC	CA)	1,951,281	ton		\$83,905,104
Tipping Fees (TSCA)		251,896	ton		\$13,854,253
	Direct Capital:				\$182,554,150
	Engineering, Procurement & Const	truction Managem	ent:		21,906,498
	Total Capital:				\$204,500,000
		INSTITUTIO	NAL CONT	FROLS	
C * 11		0	¥1		
Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Conital:				\$5,000
	Direct Capital: Engineering, Procurement & Const	truction Managem	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth	of Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring			40	\$300,000	\$4,513,889
	Total Present Worth, Longer Term	O&M Costs			\$4,513,889
	-				

Total Project Capital and O&M Cost

\$4,500,000

BAYPORT CLOSURE

Capital Items Clean Soil Cap Seeding Mitigation	Present Worth of Direct Capital: Engineering, Procurement & Constru	Quantity 2,178,000 2,178,000 450 action Managem	Units cy sy acre		Cost \$21,780,000 \$2,178,000 \$4,500,000 \$2,766,749 \$332,010
	Total Capital:				\$3,098,759
Present Worth	of Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	972	\$14,628
Long-term Monitoring			40	63,194	\$950,842
Long-term O&M			40	6,025	\$90,659
	Total Present Worth, Longer Term O&M Costs				\$1,056,130
	Total Project Capital and O&M Co	ost			\$4,200,000
	TOTAL COST				\$381,900,000

BASIS FOR PRELIMINARY COST ESTIMATES

SEDIMENT REMEDIATION FOX RIVER, WISCONSIN DE PERE TO GREEN BAY

Action Level - 1,000 ppb

Material Handling Assumptions:	5 970 520	1024	4 499 100 2	A
Volume > 1000 ppb Volume > 125 ppb	5,879,529 6,868,500	•	4,488,190 m3 5,243,130 m3	Acres corresponds to dredge footprint area
Volume > 125 ppb Volume > 250 ppb	6,449,065	·	4,922,950 m3	lootpriit area
Volume > 500 ppb	6,169,458	•	4,709,510 m3	
Volume > 5000 ppb	4,517,391	·	3,448,390 m3	
Volume > 50,000 ppb	240,778		183,800 m3	
Solids Specific Gravity	2.36	1		
Fresh Water Density	62.4	lb/ft3		
In Situ Density	33.8%	w/w 17.8% v/v	1.05 tons per cy	
Slurry Density (20% in situ)	8.0%	w/w 3.6% v/v	0.88 tons per cy	Ogden Beeman
Dewatered Density (settling pond)		w/w 15.4% v/v	1.02 tons per cy	Montgomery Watson
Dewatered Density (Hydraulic Dredging and CDF)	50.0%		1.18 tons per cy	Foth & VanDyke
Dewatered Density (Mechanical Dredging)	33.8%		1.05 tons per cy	
Treated Density	93.4%		1.28 tons per cy	
CDF Capacity	2,136,771	•	974,801 m3	
HTTD Treatment Capacity	1,577,177 1,833,253		1,650,000 tons 1,399,430 m3	
Cap Volume Vitrification Treatment Capacity	9,106,166	•	6440000.00 tons	
Viameation Treatment Capacity	7,100,100	cy in situ	0440000.00 tons	
Cost Estimating Parameters & Methodology:				
Interest Rate	6.0%			
Sales Tax	5.5%			Not Used
Engineering, Procurement and Construction Mgmt	12.0%			
Contractor Overhead and Profit - Dredging Only	15.0%	ı		
Dredging	****			
Dredge Monitoring (Water Quality)		per day		
Sediment Removal QA		per day		Onder Brown
Debris Sweep Hydraulic - 2 12-inch Cutterheads	\$10,000	per acre		Ogden Beeman
Site Preparation	\$803,400	1.0		Ogden Beeman
Mobilization - Equipment	\$1,135,000			Ogden Beeman
Mobilization - Silt Curtain	\$35,000	LS		Ogden Beeman
Shift Rate (12 hours)		per shift		Ogden Beeman
Dredge Rate		cy in situ per 12 hour shift		Ogden Beeman
Winter Over Equipment	\$285,000			Ogden Beeman
Site Restoration		per dredge launch site		
Length of Piping	95,000		18 mi	Distance to Town of Holland (map
				provided by Fred Swed). 11 mi of
				hard piping plus 7 mi of floating
				pipe
Piping Purchase/Installation		per ft		Ogden Beeman
Number of Road Crossings		each		pj, review map
Cost per Road Crossing		per crossing		pj, review map
Number of Booster Pumps		each		Ogden Beeman
Booster Pump Cost	\$2,500	per day		Ogden Beeman
Mechanical - 8 cy bucket Dock Construction	\$400,000	15		ni
Mobilization - Equipment		per dredge		pj Ogden Beeman
Mobilization - Silt Curtain	\$35,000			Ogden Beeman
Mobilization - Watertight Barge	\$100,000			Ogden Beeman - JAG estimate
Shift Rate (10 hours)		per shift		Ogden Beeman
Dredge Rate		cy in situ per 10 hour shift		Ogden Beeman
Offload Stockpile Area Prep.	\$75,000	per area		рj
Free Water per cy Dredged (10%)	20	gal		Ogden Beeman
Offload Crane Mobilization	\$50,000	LS		рj
Site Restoration	\$500,000	LS		рj
High Temperature Thermal Desorption				
Setup Staging Area	\$50,000			pj
Mobilization/Site Prep	\$150,000			Maxymillian
Sediment Treatment QA		per ton		
Ratio of Amending Sand Volume to Dredge Vol.	0.25			Ole
Sand Purchase and Deliver Blending		per ton per ton		Ole Ole
HTTD (includes off-gas treatment)		per ton		Maxymillian
Stack Testing	\$50,000			Maxymillian
Place Treated Material		per ton		max y minuti
Vitrification	CD	r		
Capital Costs	\$36,000,000	LS		Unit Cost Study- Minergy
Operating Costs	\$6,800,000			Unit Cost Study-Minergy
Vitrification (Unit Cost includes Cap and Oper Costs)		per ton		Unit Cost Study- Minergy
/				

Capping					
Mobilization/Site Prep	\$200,000	c.	1.740.100	•	Ogden Beeman
Area Sand Cap Depth	19,041,971	feet	1,769,100	m2	
Sand Purchase		per ton			Ole
Placement Rate		per cy			Ogden Beeman
Sand Density	1.4	tons per cy			
Armored Cap Depth		feet			
Cobbles		per cy			Means
Sand Density Cap Placement QA	\$100,000	tons per cy			Ogden Beeman
Long-term O&M		of capital			pj
Long-term Monitoring	\$400,000				Anne LTM
Nearshore CDF	,	1 ,	Bayport		
Land Lease or Purchase	\$1.80	per sf			Baird
Length	9,600	lf			Baird
Capping Volume	205,000	cy	2,178,000		Baird
Seeding Area	300,000	sy	2,178,000		Baird
Sheetpile Wall Length	9,600				based on bathymetry
Sheetpile Depth	30				pj
Sheetpile Cost		per sf			Baird
Shot Rock Berm		per lf			Baird
Rip Rap		per lf			pj D-i-d
Clean Soil Cap Seeding		per cy per sy			Baird Baird
Mitigation		per sy per acre			Tim
Miligution	\$10,000				Tim
Long-term Monitoring	\$650,000				Anne LTM
Long-term O&M		of capital			pj
					13
Solidification					
Percent Lime	10.0%	(w/w)			Montgomery Watson
Lime	\$60	per ton	Mixing	\$25 per ton	pj, pug mill mixing
Dewatering - Mechanical					
Mobilization	\$100,000				pj
Holding Pond-Centrifuge	\$80	per bone dry ton			Global Dewatering
Dewatering - Upland Pond (2 cells)					
Land Lease or Purchase	\$1.80	per sf			Ole
Area	4,491,228		103.10		2 days slurry + 13 wk solids * 2
Mou	7,771,220	51	103.10		cells * 2 shifts per day
Perimeter	8,477	lf	2119.251741		assume square
Depth of Material in Dewatering Cell		feet			based on size at Arrowhead Park
Cell Retention Time	24	hours			Not Used
Cell Depth	10	feet			
Mobilization	\$20,000	LS			
Clear and Grub		per acre			pj
Berm Volume		cy per lf			2:1 slope, 8-foot top
Berm Construction		per cy			рj
Rough Grading		per sf			pj
Alphalt Liner	\$1.50	per sf			pj, 2 2-inch lifts
	610,000	LS			
Demob/Disposal	\$10,000				pj
Regrade Berm Soils	\$6	per cy			рj
	\$6				
Regrade Berm Soils Seed/Sod	\$6	per cy			рj
Regrade Berm Soils Seed/Sod Water Treatment	\$6 \$1	per cy per sy			рj
Regrade Berm Soils Seed/Sod	\$6 \$1	per cy per sy gpm			pj Baird assume operate 24/7
Regrade Berm Soils Seed/Sod Water Treatment Flow Rate (3 Mechanical Dredges) Unit, Purchase (3 Mechanical Dredges) Flow Rate (3 Mechanical Dredges to CDF)	\$6 \$1 57 \$216,590	per cy per sy gpm			pj Baird
Regrade Berm Soils Seed/Sod Water Treatment Flow Rate (3 Mechanical Dredges) Unit, Purchase (3 Mechanical Dredges) Flow Rate (3 Mechanical Dredges to CDF) Unit, Purchase (3 Mechanical Dredges to CDF)	\$6 \$1 57 \$216,590 287 \$570,498	per cy per sy gpm LS gpm LS			pj Baird assume operate 24/7 pj assume operate 24/7 pj
Regrade Berm Soils Seed/Sod Water Treatment Flow Rate (3 Mechanical Dredges) Unit, Purchase (3 Mechanical Dredges) Flow Rate (3 Mechanical Dredges to CDF) Unit, Purchase (3 Mechanical Dredges to CDF) Flow Rate (2 Hydraulic Dredges)	\$6 \$1 57 \$216,590 287 \$570,498 3,563	per cy per sy gpm LS gpm LS gpm			pj Baird assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7
Regrade Berm Soils Seed/Sod Water Treatment Flow Rate (3 Mechanical Dredges) Unit, Purchase (3 Mechanical Dredges) Flow Rate (3 Mechanical Dredges to CDF) Unit, Purchase (3 Mechanical Dredges to CDF) Flow Rate (2 Hydraulic Dredges) Unit, Purchase (Hydraulic Dredges)	\$6 \$1 \$7 \$216,590 287 \$570,498 3,563 \$2,586,470	per cy per sy gpm LS gpm LS gpm LS			pj Baird assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj
Regrade Berm Soils Seed/Sod Water Treatment Flow Rate (3 Mechanical Dredges) Unit, Purchase (3 Mechanical Dredges) Flow Rate (3 Mechanical Dredges to CDF) Unit, Purchase (3 Mechanical Dredges to CDF) Flow Rate (2 Hydraulic Dredges) Unit, Purchase (Hydraulic Dredge) Flow Rate (2 Hydraulic Dredges)	\$6 \$1 \$7 \$216,590 287 \$570,498 3,563 \$2,586,470 3,110	per cy per sy gpm LS gpm LS gpm LS			pj Baird assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7
Regrade Berm Soils Seed/Sod Water Treatment Flow Rate (3 Mechanical Dredges) Unit, Purchase (3 Mechanical Dredges) Flow Rate (3 Mechanical Dredges to CDF) Unit, Purchase (3 Mechanical Dredges to CDF) Flow Rate (2 Hydraulic Dredges) Unit, Purchase (Hydraulic Dredge) Flow Rate (2 Hydraulic Dredge) Flow Rate (2 Hydraulic Dredges; settling pond) Flow Rate (mechanical dewatering)	\$6 \$1 \$7 \$216,590 287 \$570,498 3,563 \$2,586,470 3,110 3,563	per cy per sy gpm LS gpm LS gpm LS gpm gpm			pj Baird assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj
Regrade Berm Soils Seed/Sod Water Treatment Flow Rate (3 Mechanical Dredges) Unit, Purchase (3 Mechanical Dredges) Flow Rate (3 Mechanical Dredges to CDF) Unit, Purchase (3 Mechanical Dredges to CDF) Flow Rate (2 Hydraulic Dredges) Unit, Purchase (Hydraulic Dredges) Unit, Purchase (Hydraulic Dredge) Flow Rate (2 Hydraulic Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering)	\$6 \$1 \$7 \$216,590 287 \$570,498 3,563 \$2,586,470 3,110 3,563 \$2,586,470	gpm LS gpm LS gpm LS gpm gpm LS			pj Baird assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7
Regrade Berm Soils Seed/Sod Water Treatment Flow Rate (3 Mechanical Dredges) Unit, Purchase (3 Mechanical Dredges) Flow Rate (3 Mechanical Dredges to CDF) Unit, Purchase (3 Mechanical Dredges to CDF) Flow Rate (2 Hydraulic Dredges) Unit, Purchase (Hydraulic Dredge) Flow Rate (2 Hydraulic Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator)	\$6 \$1 \$7 \$216,590 287 \$570,498 3,563 \$2,586,470 3,110 3,563 \$2,586,470 \$0.40	per cy per sy gpm LS gpm LS gpm LS gpm gpm LS gpm gpm	s		pj Baird assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj
Regrade Berm Soils Seed/Sod Water Treatment Flow Rate (3 Mechanical Dredges) Unit, Purchase (3 Mechanical Dredges) Flow Rate (3 Mechanical Dredges to CDF) Unit, Purchase (3 Mechanical Dredges to CDF) Flow Rate (2 Hydraulic Dredges to CDF) Flow Rate (2 Hydraulic Dredges) Unit, Purchase (Hydraulic Dredges) Flow Rate (2 Hydraulic Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA	\$6 \$1 \$7 \$216,590 287 \$570,498 3,563 \$2,586,470 3,110 3,563 \$2,586,470 \$0,40 \$200	per cy per sy gpm LS gpm LS gpm LS gpm gpm gpm LS gpm gpm per 1,000 gallon per day	s		pj Baird assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj assume operate 24/7
Regrade Berm Soils Seed/Sod Water Treatment Flow Rate (3 Mechanical Dredges) Unit, Purchase (3 Mechanical Dredges) Flow Rate (3 Mechanical Dredges to CDF) Unit, Purchase (3 Mechanical Dredges to CDF) Flow Rate (2 Hydraulic Dredges) Unit, Purchase (Hydraulic Dredge) Flow Rate (2 Hydraulic Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator)	\$6 \$1 \$7 \$216,590 287 \$570,498 3,563 \$2,586,470 3,110 3,563 \$2,586,470 \$0.40	per cy per sy gpm LS gpm LS gpm LS gpm gpm gpm LS gpm gpm per 1,000 gallon per day	S		pj Baird assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to
Regrade Berm Soils Seed/Sod Water Treatment Flow Rate (3 Mechanical Dredges) Unit, Purchase (3 Mechanical Dredges) Flow Rate (3 Mechanical Dredges to CDF) Unit, Purchase (3 Mechanical Dredges to CDF) Flow Rate (2 Hydraulic Dredges) Unit, Purchase (Hydraulic Dredges) Flow Rate (2 Hydraulic Dredges) Flow Rate (2 Hydraulic Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge	\$6 \$1 \$7 \$216,590 287 \$570,498 3,563 \$2,586,470 3,110 3,563 \$2,586,470 \$0,40 \$200	per cy per sy gpm LS gpm LS gpm LS gpm gpm gpm LS gpm gpm per 1,000 gallon per day	s		pj Baird assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred
Regrade Berm Soils Seed/Sod Water Treatment Flow Rate (3 Mechanical Dredges) Unit, Purchase (3 Mechanical Dredges) Flow Rate (3 Mechanical Dredges to CDF) Unit, Purchase (3 Mechanical Dredges to CDF) Unit, Purchase (3 Mechanical Dredges to CDF) Flow Rate (2 Hydraulic Dredges) Unit, Purchase (Hydraulic Dredge) Flow Rate (2 Hydraulic Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge	\$6 \$1 \$7 \$216,590 287 \$570,498 3,563 \$2,586,470 3,110 3,563 \$2,586,470 \$0,40 \$200	per cy per sy gpm LS gpm LS gpm LS gpm gpm gpm LS gpm gpm per 1,000 gallon per day	s		pj Baird assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to
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Regrade Berm Soils Seed/Sod Water Treatment Flow Rate (3 Mechanical Dredges) Unit, Purchase (3 Mechanical Dredges) Flow Rate (3 Mechanical Dredges to CDF) Unit, Purchase (3 Mechanical Dredges to CDF) Flow Rate (2 Hydraulic Dredges) Unit, Purchase (Hydraulic Dredges) Flow Rate (2 Hydraulic Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Existing NR 500 Commercial Disposal Facility	\$6 \$1 \$7 \$216,590 287 \$570,498 3,563 \$2,586,470 3,110 3,563 \$2,586,470 \$0,40 \$200 20,000	gpm LS gpm LS gpm LS gpm LS gpm gpm gpm ppm LS	s		pj Baird assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred
Regrade Berm Soils Seed/Sod Water Treatment Flow Rate (3 Mechanical Dredges) Unit, Purchase (3 Mechanical Dredges) Flow Rate (3 Mechanical Dredges to CDF) Unit, Purchase (3 Mechanical Dredges to CDF) Unit, Purchase (3 Mechanical Dredges to CDF) Flow Rate (2 Hydraulic Dredge) Flow Rate (2 Hydraulic Dredge) Flow Rate (2 Hydraulic Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Existing NR 500 Commercial Disposal Facility Load Soil for Hauling Round-trip Hauling Round-trip Hauling Round-trip Hauling	\$6 \$1 \$7 \$216,590 287 \$570,498 3,563 \$2,586,470 3,110 3,563 \$2,586,470 \$0.40 \$200 20,000	per cy per sy gpm LS gpm LS gpm LS gpm gpm LS gpm gpm ts per 1,000 gallon per day feet per ton hours hours	s		pj Baird assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj
Regrade Berm Soils Seed/Sod Water Treatment Flow Rate (3 Mechanical Dredges) Unit, Purchase (3 Mechanical Dredges) Flow Rate (3 Mechanical Dredges to CDF) Unit, Purchase (3 Mechanical Dredges to CDF) Unit, Purchase (3 Mechanical Dredges to CDF) Flow Rate (2 Hydraulic Dredges) Unit, Purchase (Hydraulic Dredge) Flow Rate (2 Hydraulic Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Existing NR 500 Commercial Disposal Facility Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA)	\$6 \$1 \$7 \$216,590 287 \$570,498 3,563 \$2,586,470 3,110 3,563 \$2,586,470 \$0.40 \$200 20,000	per cy per sy gpm LS gpm LS gpm LS gpm gpm LS per 1,000 gallon per day feet per ton hours hours hours per ton	S		pj Baird assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul
Regrade Berm Soils Seed/Sod Water Treatment Flow Rate (3 Mechanical Dredges) Unit, Purchase (3 Mechanical Dredges) Flow Rate (3 Mechanical Dredges to CDF) Unit, Purchase (3 Mechanical Dredges to CDF) Unit, Purchase (3 Mechanical Dredges to CDF) Flow Rate (2 Hydraulic Dredges) Unit, Purchase (Hydraulic Dredges) Flow Rate (2 Hydraulic Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Existing NR 500 Commercial Disposal Facility Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA)	\$6 \$1 \$7 \$216,590 287 \$570,498 3,563 \$2,586,470 3,110 3,563 \$2,586,470 \$0,40 \$200 20,000 \$2,80 2 0.5 \$43 \$55	per cy per sy gpm LS gpm LS gpm LS gpm gpm LS gpm gpm er 1,000 gallon per day feet per ton hours hours hours per ton per ton	s		pj Baird assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj pj St. Paul St. Paul
Regrade Berm Soils Seed/Sod Water Treatment Flow Rate (3 Mechanical Dredges) Unit, Purchase (3 Mechanical Dredges) Flow Rate (3 Mechanical Dredges to CDF) Unit, Purchase (3 Mechanical Dredges to CDF) Flow Rate (2 Hydraulic Dredges) Unit, Purchase (Hydraulic Dredges) Unit, Purchase (Hydraulic Dredges) Flow Rate (2 Hydraulic Dredges; settling pond) Flow Rate (2 Hydraulic Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Existing NR 500 Commercial Disposal Facility Load Soil for Hauling Round-trip Hauling Round-trip Hauling Round-trip Hauling Round-trip Hauling Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate	\$6 \$1 \$7 \$216,590 287 \$570,498 3,563 \$2,586,470 3,110 3,563 \$2,586,470 \$0,40 \$200 20,000 \$2.80 2 0.5 \$43 \$55 \$75	per cy per sy gpm LS gpm LS gpm LS gpm gpm LS er 1,000 gallon per day feet per ton hours hours per ton	S		pj Baird assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj
Regrade Berm Soils Seed/Sod Water Treatment Flow Rate (3 Mechanical Dredges) Unit, Purchase (3 Mechanical Dredges) Flow Rate (3 Mechanical Dredges to CDF) Unit, Purchase (3 Mechanical Dredges to CDF) Flow Rate (2 Hydraulic Dredges) Unit, Purchase (Hydraulic Dredges) Flow Rate (2 Hydraulic Dredges) Flow Rate (2 Hydraulic Dredges; settling pond) Flow Rate (2 Hydraulic Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Existing NR 500 Commercial Disposal Facility Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load	\$6 \$1 \$7 \$216,590 287 \$570,498 3,563 \$2,586,470 3,110 3,563 \$2,586,470 \$0.40 \$200 20,000 \$2,000 \$2,000 \$2,580 \$2,5	per cy per sy gpm LS gpm LS gpm LS gpm gpm LS per 1,000 gallon per day feet per ton hours hours per ton per ton per ton per hour tons	S		pj Baird assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj pj
Regrade Berm Soils Seed/Sod Water Treatment Flow Rate (3 Mechanical Dredges) Unit, Purchase (3 Mechanical Dredges) Flow Rate (3 Mechanical Dredges to CDF) Unit, Purchase (3 Mechanical Dredges to CDF) Unit, Purchase (3 Mechanical Dredges to CDF) Flow Rate (2 Hydraulic Dredges) Unit, Purchase (Hydraulic Dredges) Flow Rate (2 Hydraulic Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Existing NR 500 Commercial Disposal Facility Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer System Construction	\$6 \$1 \$7 \$216,590 287 \$570,498 3,563 \$2,586,470 3,110 3,563 \$2,586,470 \$0,40 \$200 20,000 \$2.80 2 0.5 \$43 \$55 \$75	per cy per sy gpm LS gpm LS gpm LS gpm gpm LS per 1,000 gallon per day feet per ton hours hours per ton per ton per ton per hour tons	S		pj Baird assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj
Regrade Berm Soils Seed/Sod Water Treatment Flow Rate (3 Mechanical Dredges) Unit, Purchase (3 Mechanical Dredges) Flow Rate (3 Mechanical Dredges to CDF) Unit, Purchase (3 Mechanical Dredges to CDF) Unit, Purchase (3 Mechanical Dredges to CDF) Flow Rate (2 Hydraulic Dredges) Unit, Purchase (Hydraulic Dredges) Flow Rate (2 Hydraulic Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Existing NR 500 Commercial Disposal Facility Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer System Construction New Landfill Disposal (Dedicated NR 500 Monofill)	\$6 \$1 \$7 \$216,590 287 \$570,498 3,563 \$2,586,470 \$0,40 \$200 20,000 \$2,80 2 0,55 \$43 \$55 \$75 32 1,000,000	per cy per sy gpm LS gpm LS gpm LS gpm gpm LS per 1,000 gallon per day feet per ton hours hours per ton per ton per ton per hour tons	s		pj Baird assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj pj
Regrade Berm Soils Seed/Sod Water Treatment Flow Rate (3 Mechanical Dredges) Unit, Purchase (3 Mechanical Dredges) Flow Rate (3 Mechanical Dredges to CDF) Unit, Purchase (3 Mechanical Dredges to CDF) Unit, Purchase (3 Mechanical Dredges to CDF) Flow Rate (2 Hydraulic Dredges) Unit, Purchase (Hydraulic Dredges) Flow Rate (2 Hydraulic Dredges; settling pond) Flow Rate (2 Hydraulic Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Existing NR 500 Commercial Disposal Facility Load Soil for Hauling Round-trip Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer System Construction New Landfill Disposal (Dedicated NR 500 Monofill) Landfill Construction	\$6 \$1 \$7 \$216,590 287 \$570,498 3,563 \$2,586,470 3,110 3,563 \$2,586,470 \$0,40 \$200 20,000 \$2,80 2 0.5 \$43 \$55 \$75 32 1,000,000	per cy per sy gpm LS gpm LS gpm LS gpm gpm LS gpm gpm LS er 1,000 gallon per day feet per ton hours hours hours per ton	S		pj Baird assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj pj
Regrade Berm Soils Seed/Sod Water Treatment Flow Rate (3 Mechanical Dredges) Unit, Purchase (3 Mechanical Dredges) Flow Rate (3 Mechanical Dredges to CDF) Unit, Purchase (3 Mechanical Dredges to CDF) Flow Rate (2 Hydraulic Dredges) Unit, Purchase (Hydraulic Dredges) Flow Rate (2 Hydraulic Dredges) Flow Rate (2 Hydraulic Dredges) Flow Rate (2 Hydraulic Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Existing NR 500 Commercial Disposal Facility Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer System Construction New Landfill Disposal (Dedicated NR 500 Monofill) Landfill Construction	\$6 \$1 \$7 \$216,590 287 \$570,498 3,563 \$2,586,470 3,110 3,563 \$2,586,470 \$0,40 \$200 20,000 \$2,0	per cy per sy gpm LS gpm LS gpm LS gpm gpm LS gpm gpm LS er 1,000 gallon per day feet per ton hours hours per ton	S		pj Baird assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj pj
Regrade Berm Soils Seed/Sod Water Treatment Flow Rate (3 Mechanical Dredges) Unit, Purchase (3 Mechanical Dredges) Flow Rate (3 Mechanical Dredges to CDF) Unit, Purchase (3 Mechanical Dredges to CDF) Unit, Purchase (3 Mechanical Dredges to CDF) Flow Rate (2 Hydraulic Dredges) Unit, Purchase (Hydraulic Dredges) Flow Rate (2 Hydraulic Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Existing NR 500 Commercial Disposal Facility Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer System Construction New Landfill Disposal (Dedicated NR 500 Monofill) Landfill Construction Local Siting Fee Closure Cap	\$6 \$1 \$7 \$216,590 287 \$570,498 3,563 \$2,586,470 3,110 3,563 \$2,586,470 \$0,40 \$200 20,000 \$2,80 2 0.5 \$43 \$55 \$75 32 1,000,000	gpm LS gpm LS gpm LS gpm LS gpm gpm LS gpm gpm fet LS per 1,000 gallon per day feet per ton hours hours hours per ton per hour tons LS per cy per acre	S		pj Baird assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj pj
Regrade Berm Soils Seed/Sod Water Treatment Flow Rate (3 Mechanical Dredges) Unit, Purchase (3 Mechanical Dredges) Flow Rate (3 Mechanical Dredges to CDF) Unit, Purchase (3 Mechanical Dredges to CDF) Flow Rate (2 Hydraulic Dredges) Unit, Purchase (Hydraulic Dredges) Flow Rate (2 Hydraulic Dredges) Flow Rate (2 Hydraulic Dredges) Flow Rate (2 Hydraulic Dredges; settling pond) Flow Rate (mechanical dewatering) Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator) Water Treatment QA Length of piping for treated water discharge Disposal Existing NR 500 Commercial Disposal Facility Load Soil for Hauling Round-trip Hauling Round-trip Hauling (to Vitrification Facility) Tipping Fee (non-TSCA) Tipping Fee (TSCA) Truck Rate Truck Load Conveyer System Construction New Landfill Disposal (Dedicated NR 500 Monofill) Landfill Construction	\$6 \$1 \$7 \$216,590 287 \$570,498 3,563 \$2,586,470 3,110 3,563 \$2,586,470 \$0.40 \$200 20,000 \$2,586,470 \$0.40 \$200 20,000 \$2,586,470 \$0.40 \$200 20,000 \$2,586,470 \$0.40 \$200 20,000 \$2,586,470 \$0.40 \$200 20,000 \$2,586,470 \$0.40 \$2,586,470 \$0.40 \$2,586,470 \$0.40 \$2,586,470 \$0.40 \$2,586,470 \$0.4	gpm LS gpm LS gpm LS gpm LS gpm gpm LS gpm gpm fet LS per 1,000 gallon per day feet per ton hours hours hours per ton per hour tons LS per cy per acre	S		pj Baird assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj assume operate 24/7 pj pj, 1 sample/day Distance from town of Holland to river per map provided by Fred Swed pj pj pj St. Paul St. Paul pj pj

Institutional Controls		
Public Education Program	\$100,000	pj
O&M Plans	\$20,000	pj
Deed Restrictions	\$5,000	pj
Annual Costs		
Public Education Program	\$30,000	pj
Maintaining O&M Plans	\$800	pj
Reporting	\$20,000	pj
Long-term Monitoring	\$600,000	Anne LTM
Long-term Monitoring (no action)	\$300,000	Anne LTM

ALTERNATIVE A: No Action

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Construc	ction Managem	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth of Longer Term Operating Costs Long-term Monitoring (no action)			Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term O&	&M Costs			\$4,513,889
	Total Project Capital and O&M Co	st			\$4,500,000
	TOTAL COST				\$4,500,000

ALTERNATIVE B: Monitored Natural Recovery

MONITORING/INSTITUTIONAL CONTROLS

Capital Items	Quantity	Units		Cost
Public Education Program	1	LS		\$100,000
O&M Plans	1	LS		\$20,000
Deed Restrictions	1	LS		\$5,000
Direct Capital:				\$125,000
Engineering, Procurement & C	Construction Managem	ent:		15,000
Total Capital:				\$140,000
Present Worth of Longer Term Operating Cos	ets	Years	Annual Cost	
Long-term Monitoring		40	\$600,000	\$9,027,778
Public Education Program		40	\$30,000	\$451,389
Maintaining O&M Plans		40	\$800	\$12,037
Reporting		40	\$20,000	\$300,926
Total Present Worth, Longer	Γerm O&M Costs			\$9,792,130
Total Project Capital and O	&M Cost			\$9,900,000
TOTAL COST				\$9,900,000

ALTERNATIVE C1: Dredge Sediment With Disposal at Existing NR 500 Commercial Disposal Facility (Passive Dewatering)

SEDIMENT REMOVAL (MECHANICAL DREDGING)

Capital Items	Quantity	Units		Cost
Mobilization - Equipment and Silt Curtain	3	LS		\$1,470,000
Watertight Barges	4	ea		\$400,000
Offload Stockpile Area Prep.	1	LS		\$75,000
Dredging - 12 hour shifts	3,095	Day	23.80769231	\$52,615,000
Dredge Monitoring (Water Quality)	3,095	Day		\$9,285,000
Sediment Removal QA	3,095	Day		\$3,714,000
Offload Crane Mobilization	1	LS		\$50,000
Site Restoration	1	ea		\$500,000
Direct Capital:				\$68,109,000
Engineering, Procurement & C	Construction Managem	ent:		8,173,080
Contractor Overhead/Profit:				10,216,350
Total Capital:				\$86,500,000

WATER TREATMENT

G 1.11			** *.		
Capital Items Unit Purchase		Quantity 57	Units gpm		Cost \$216,590
Water Treatment (Inclu	des Operator)	118,742,966	gal		\$47,497
Water Treatment QA		1,445	day		\$289,000
	Direct Conital:				\$553,087
	Direct Capital: Engineering, Procurement & Consti	uction Manageme	ent.		66,370
	Total Capital:				\$600,000
	SEDIMENT DISPOSA	L (Existing N	R 500 Com	mercial Disposal Facility)	
Capital Items		Quantity	Units		Cost
Solidification		6,151,006	ton		\$153,775,150
Lime Purchase		615,101	ton		\$36,906,060
Soil Loading		6,151,006	ton		\$17,222,817
Soil Hauling		6,151,006	ton		\$28,832,841
Tipping Fees (non-TSC	A)	5,899,111	ton		\$253,661,752
Tipping Fees (TSCA)		251,896	ton		\$13,854,253
	Direct Capital:				\$504,252,872
	Engineering, Procurement & Constr	ruction Manageme	ent.		60,510,345
	8				
	Total Capital:				\$564,800,000
		INSTITUTIO	NAL CON	ΓROLS	
Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Constr	ruction Manageme	ent:		\$5,000 600
	Total Capital:				\$5,600
	f Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring	(no action)		40	\$300,000	\$4,513,889
	Total Present Worth, Longer Term	O&M Costs			\$4,513,889
	Total Project Capital and O&M (Cost			\$4,500,000
		BAYPORT	CLOSURE	2	
Capital Items		Quantity	Units		Cost
Clean Soil Cap		2,178,000	cy		\$21,780,000
Seeding		2,178,000	sy		\$2,178,000
Mitigation		450	acre		\$4,500,000
	Present Worth of Direct Capital: Engineering, Procurement & Constr	ruction Manageme	ent:		\$2,766,749 \$332,010
	Total Capital:				\$3,098,759
Present Worth o	f Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	972	\$14,628
Long-term Monitoring Long-term O&M			40 40	63,194 6,025	\$950,842 \$90,659
				,==	
	Total Present Worth, Longer Term	O&M Costs			\$1,056,130
	Total Project Capital and O&M (Cost			\$4,200,000
	TOTAL COST				\$660,600,000

ALTERNATIVE C2A: Dredge Sediment with Combined Dewatering and Disposal Facility

SEDIMENT REMOVAL (2 12-INCH CUTTERHEADS)

	SEDIMENT	REMOVAL (2	12-INCH C	UTTERHEADS)	
Capital Items		Quantity	Units		Cost
Site Preparation		2	LS		\$1,606,800
Mobilization - Equipm	nent and Silt Curtain	1	LS		\$1,170,000
Debris Sweep	1:0 /1	1034	acre	5 500001000	\$16,544,000
Dredging - 2 12 hour s Dredge Monitoring (W		1019 1019	Day Day	5.598901099	\$28,939,600 \$6,114,000
Sediment Removal QA		1019	Day		\$2,445,600
Piping		95,000	ft		\$6,365,000
Road Crossings		12	ea		\$600,000
Booster Pumps		4	ea		\$10,190,000
Winter Over All Equip	oment	6	yr		\$1,710,000
Site Restoration		1	LS		\$600,000
	Direct Capital:				\$76,285,000
	Engineering, Procurement & Con	struction Manageme	ent:		9,154,200
	Contractor Overhead/Profit:				11,442,750
	Total Capital:				\$96,900,000
		WATER TR	REATMENT	•	
Capital Items		Quantity	Units		Cost
Unit Purchase Water Treatment (Incl	uding Operator)	3,563 5,227,509,847	gpm gal		\$2,586,470 \$2,091,004
Water Treatment (Inci	uding Operator)	1,019	Day		\$407,600
Piping		20,000	ft		\$1,340,000
1 0					
	Direct Capital:				\$6,425,074
	Engineering, Procurement & Con	struction Manageme	ent:		771,009
	Total Capital:				\$7,200,000
	SEDIMENT	Г DISPOSAL (I	Dedicated NI	R 500 Monofill)	
Capital Items		Quantity	Units		Cost
Landfill Construction		1	LS		\$22,246,866
Local Siting Fee		3,513,757	cy		\$17,568,787
Closure		109	acres		\$10,889,744
	Direct Capital:				\$50,705,397
	Engineering, Procurement & Con	struction Manageme	ent:		6,084,648
	Total Capital:				\$56,800,000
	-				,,
	of Longer Term Operating Costs		Years 10	Annual Cost \$500,000	\$3,680,044
Operations Post Closure Monitoria	ng		40	\$30,000	\$252,053
	Total Present Worth, Longer Terr	n O&M Costs		*******	\$3,932,097
	Total Project Capital and O&M				\$60,700,000
	Total Project Capital and O&N.	i cost			300,700,000
		INSTITUTIO	NAL CONT	TROLS	
Capital Items		Quantity	Units		Cost
Deed Restrictions		1	LS		\$5,000
	Direct Capital:				\$5,000
	Engineering, Procurement & Con	struction Manageme	ent:		600
	Total Capital:				\$5,600
Present Worth Long-term Monitoring	of Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Terr	m O&M Costs			\$4,513,889
	Total Project Capital and O&M	1 Cost			\$4,500,000

BAYPORT CLOSURE

		BAYPORT	CLOSURE		
Capital Items		Quantity	Units		Cost
Clean Soil Cap		2,178,000	cy		\$21,780,000
Seeding		2,178,000	sy		\$2,178,000
Mitigation		450	acre		\$4,500,000
	Present Worth of Direct Capital:				\$2,766,749
	Engineering, Procurement & Const	ruction Managem	ent:		\$332,010
	Total Capital:				\$3,098,759
Present Worth o	f Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	972	\$14,628
Long-term Monitoring			40	63,194	\$950,842
Long-term O&M			40	6,025	\$90,659
	Total Present Worth, Longer Term	O&M Costs			\$1,056,130
	Total Project Capital and O&M	Cost			\$4,200,000
	TOTAL COST				\$169,600,000
ALTERNATIVE C2B	: Dredge Sediment with Sepa	rate Dewateri	ng and Dispo	osal Facilities	
	SEDIMENT F	REMOVAL (2	12-INCH C	UTTERHEADS)	

02221112111	112	(= 12 11 (01)	ccrizinizi,

\$1,606,800 \$1,170,000
\$1,170,000
\$16,544,000
\$28,939,600
\$6,114,000
\$2,445,600
\$6,365,000
\$600,000
\$10,190,000
\$1,710,000
\$600,000

Direct Capital: Engineering, Procurement & Construction Management: Contractor Overhead/Profit: \$76,285,000 9,154,200 11,442,750

Total Capital: \$96,900,000

SEDIMENT DEWATERING (GRAVITY - NR 213)

Capital Items	Quantity	Units	Cost
Land Lease or Purchase	4,491,228	sf	\$8,084,210
Mobilization	1	LS	\$20,000
Clear and Grub	4,491,228	sf	\$206,209
Berm Construction	87,910	cy	\$527,458
Rough Grading	4,491,228	sf	\$1,122,807
Liner Placement	4,491,228	sf	\$6,736,842
Demob/Disposal	1	LS	\$10,000
Regrade	87,910	cy	\$527,458
Seed/Sod	499,025	sy	\$499,025

\$17,734,010 2,128,081 Engineering, Procurement & Construction Management:

Total Capital: \$19,900,000

WATER TREATMENT

Capital Items	Quantity	Units	Cost
Unit Purchase	3,110	gpm	\$2,586,470
Water Treatment (Including Operator)	4,562,927,820	gal	\$1,825,171
Water Treatment QA	1,019	Day	\$407,600
Piping	20,000	ft	\$1,340,000
Direct Capital:			\$6,159,241
Engineering, Procurement	& Construction Manageme	nt:	739,109

Total Capital:

\$6,900,000

SEDIMENT DISPOSAL (Dedicated NR 500 Monofill)

Capital Items	Quanti	-		Cost
Solidification	6,930,13			\$173,253,336
Lime Purchase	693,01			\$41,580,840
Sediment Loading	6,930,13			\$19,404,374
Sediment Hauling	6,930,13			\$32,485,000
Landfill Construction	1	LS		\$22,246,866
Local Siting Fee	3,513,75	,		\$17,568,787
Closure	109	acres		\$10,889,744
	Direct Capital:			\$317,428,947
	Engineering, Procurement & Construction Man	agement:		38,091,474
	5 5,			
	Total Capital:			\$355,500,000
Present Worth	of Longer Term Operating Costs	Years	Annual Cost	
Operations		10	\$500,000	\$3,680,044
Post Closure Monitori	ng	40	\$30,000	\$252,053
	Total Present Worth, Longer Term O&M Costs			\$3,932,097
	Total Project Capital and O&M Cost			\$359,400,000
	3,			,,
	INSTITUT	IONAL CONTE	ROLS	
6 3 15	0	. NY **		G .
Capital Items Deed Restrictions	Quanti 1	ty Units LS		Cost \$5,000
Deed Restrictions	1	LS		\$3,000
	Direct Capital: Engineering, Procurement & Construction Man	agament:		\$5,000 600
		agement.		
	Total Capital:			\$5,600
Present Worth	of Longer Term Operating Costs	Years	Annual Cost	
Long-term Monitoring	g (no action)	40	\$300,000	\$4,513,889
	Total Present Worth, Longer Term O&M Costs			\$4,513,889
	Total Project Capital and O&M Cost			\$4,500,000
	Total Troject capital and Octor Cost			54,500,000
	BAYPO	ORT CLOSURE	E	
Capital Items	Quanti	ty Units		Cost
Clean Soil Cap	2,178,00	•		\$21,780,000
Seeding	2,178,00			\$2,178,000
Mitigation	450	acre		\$4,500,000
	Present Worth of Direct Capital: Engineering, Procurement & Construction Man	agement:		\$2,766,749 \$332,010
	Total Capital:			\$3,098,759
				00,000,100
Present Worth Mitigation	of Longer Term Operating Costs	Years 40	Annual Cost 972	\$14,628
Long-term Monitoring	7	40	63,194	\$14,628 \$950,842
Long-term O&M	-	40	6,025	\$90,659
	Total Present Worth, Longer Term O&M Costs			\$1,056,130
	Total Project Capital and O&M Cost			\$4,200,000
	TOTAL COST			6401 000 000
	TOTAL COST			\$491,800,000

ALTERNATIVE C3: Dredge Sediment With Disposal at Existing NR 500 Commercial Disposal Facility (Mechanical Dewatering)

SEDIMENT REMOVAL (2 - 12-inch CUTTERHEADS)

Capital Items	Quantity	Units		Cost
Site Preparation	2	LS		\$1,606,800
Mobilization - Equipment and Silt Curtain	1	LS		\$1,170,000
Debris Sweep	1034	acre		\$16,544,000
Dredging - 2 12 hour shifts/day	1019	Day	5.598901099	\$28,939,600
Dredge Monitoring (Water Quality)	1019	Day		\$6,114,000
Sediment Removal QA	1019	Day		\$2,445,600
Winter Over All Equipment	6	yr		\$1,710,000
Site Restoration	1	LS		\$600,000
Direct Capital:				\$59,130,000
Engineering, Procurement & C	onstruction Managem	ent:		7,095,600
Contractor Overhead/Profit:				8,869,500
Total Capital:				\$75,100,000

SEDIMENT DEWATERING (MECHANICAL)

Capital Items Mobilization/Site Prep Dewatering	Quantity 1 2,079,040	Units LS bdt	Cost \$100,000 \$166,323,203
	Direct Capital: Engineering, Procurement & Construction Management	ent:	\$166,423,203 19,970,784
	Total Capital:		\$186,400,000

WATER TREATMENT

Capital Items Unit Purchase Water Treatment (Includes Operator) Water Treatment QA	Quantity 3,563 5,227,509,847 2,854	Units gpm gal day	Cost \$2,586,470 \$2,091,004 \$570,800
Direct Capital: Engineering, Procurement	& Construction Managemen	nt:	\$5,248,274 629,793
Total Capital:			\$5,900,000

SEDIMENT DISPOSAL (Existing NR 500 Commercial Disposal Facility)

Capital Items	Quantity	Units	Cost
Soil Loading	4,158,080	ton	\$11,642,624
Soil Hauling	4,158,080	ton	\$19,491,000
Tipping Fees (non-TSCA)	3,987,799	ton	\$171,475,344
Tipping Fees (TSCA)	170,281	ton	\$9,365,475
Direct Capital:			\$211,974,444
Engineering, Procureme	ent & Construction Managem	ent:	25,436,933

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Construct	ion Manageme	nt:		\$5,000 600
	Total Capital:				\$5,600
Present Worth Long-term Monitoring	of Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term O&	M Costs			\$4,513,889
	Total Project Capital and O&M Cos	t			\$4,500,000

Total Capital:

\$237,400,000

BAYPORT CLOSURE

Capital Items Clean Soil Cap Seeding Mitigation	Present Worth of Direct Capital: Engineering, Procurement & Const Total Capital:	Quantity 2,178,000 2,178,000 450 ruction Management	Units cy sy acre		Cost \$21,780,000 \$2,178,000 \$4,500,000 \$2,766,749 \$332,010
Present Worth Mitigation Long-term Monitoring Long-term O&M	of Longer Term Operating Costs Total Present Worth, Longer Term	O&M Costs	Years 40 40 40	Annual Cost 972 63,194 6,025	\$14,628 \$950,842 \$90,659 \$1,056,130
ALTERNATIVE D:	Total Project Capital and O&M TOTAL COST Dredge Sediment, CDF and O		l		\$4,200,000 \$513,500,000

SEDIMENT REMOVAL (MECHANICAL DREDGING)

Capital Items	Quantity	Units	Cost
Mobilization - Equipment and Silt Curtain	3	LS	\$1,470,000
Watertight Barges	4	ea	\$400,000
Offload Stockpile Area Prep.	1	LS	\$75,000
Dredging - 12 hour shifts	3,095	Day	\$52,615,000
Dredge Monitoring (Water Quality)	3,095	Day	\$9,285,000
Sediment Removal QA	3,095	Day	\$3,714,000
Offload Crane Mobilization	1	LS	\$50,000
Site Restoration	1	ea	\$500,000
Direct Capital:			\$68,109,000
Engineering, Procurement & C	Construction Managem	ent:	8,173,080
Contractor Overhead/Profit:	_		10,216,350
Total Capital:			\$86,500,000

CDF CONSTRUCTION

G :: 11		0 "	WY **		6.4
Capital Items		Quantity	Units		Cost
Land Lease or Purchase		2,700,000	sf		\$4,860,000
Shot Rock/Rip Rap		9,600	lf		\$6,816,000
Sheetpile Placement		288,000	sf		\$5,472,000
Clean Soil Cap		205,000	cy		\$2,050,000
Seeding		300,000	sy		\$300,000
Mitigation		62	acre		\$619,835
·······gution		02	uere		\$617,632
	Direct Capital:				\$20,117,835
	•	nation Monogom	ant:		\$2,414,140
Engineering, Procurement & Construction Management:					\$2,414,140
	Total Capital:				\$22,531,975
	Total Capital.				922,331,773
Present Worth o	f Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	10,000	\$150,463
Long-term Monitoring			40	650,000	\$9,780,093
Long-term O&M			40	450,639	\$6,780,456
Long-term Octivi			40	430,039	\$0,780,430
	Total Present Worth Longer Term (O&M Costs			\$16,711,012
Total Present Worth, Longer Term O&M Costs					\$10,711,012
	Total Project Capital and O&M C	Cost			\$39,200,000

WATER TREATMENT

Capital Items	Quantity	Units	Cost
Unit Purchase	287	gpm	\$570,498
Water Treatment (Includes Operator)	292,384,518	gal	\$116,954
Water Treatment QA	1,445	day	\$289,000
Direct Capital:			\$976,452
Engineering, Procurement	& Construction Manageme	nt:	117,174
Total Capital:			\$1,100,000

SEDIMENT DISPOSAL (Existing NR 500 Commercial Disposal Facility)

Capital Items	Quantity	Units	Cost
Solidification	3,915,574	ton	\$97,889,350
Lime Purchase	391,558	ton	\$23,493,480
Soil Loading	3,915,574	ton	\$10,963,607
Soil Hauling	3,915,574	ton	\$18,354,253
Tipping Fees (non-TSCA)	3,663,678	ton	\$157,538,173
Tipping Fees (TSCA)	395,705	ton	\$21,763,760
Direct Capital:			\$330,002,623
Engineering, Procurement	& Construction Managem	ent:	39,600,315
Total Capital:			\$369,600,000

INSTITUTIONAL CONTROLS

Capital Items		Quantity	Units		Cost
Deed Restrictions		1	LS		\$5,000
	Direct Capital: Engineering, Procurement & Construc	ction Manageme	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth of Longer Term Operating Costs Years Annual Cost Long-term Monitoring (no action) 40 \$300,000				\$4,513,889	
	Total Present Worth, Longer Term Oc	&M Costs			\$4,513,889
	Total Project Capital and O&M Co	st			\$4,500,000

BAYPORT CLOSURE

Capital Items Clean Soil Cap Seeding Mitigation		Quantity 2,178,000 2,178,000 450	Units cy sy acre		Cost \$21,780,000 \$2,178,000 \$4,500,000
	Present Worth of Direct Capital: Engineering, Procurement & Construc	tion Manageme	ent:		\$2,766,749 \$332,010
	Total Capital:				\$3,098,759
Mitigation	of Longer Term Operating Costs		Years 40	Annual Cost 972	\$14,628
Long-term Monitoring Long-term O&M			40 40	63,194 6,025	\$950,842 \$90,659
	Total Present Worth, Longer Term O&	\$1,056,130			
	Total Project Capital and O&M Co	st			\$4,200,000

TOTAL COST \$505,100,000

ALTERNATIVE E: Dredge Sediment and Thermal Treatment

Total Capital:

SEDIMENT REMOVAL (2 - 12-inch CUTTERHEAD'S)

Capital Items	Quantity	Units		Cost
Site Preparation	2	LS		\$1,606,800
Mobilization - Equipment and Silt Curtain	1	LS		\$1,170,000
Debris Sweep	1034	acre		\$16,544,000
Dredging - 2 12 hour shifts/day	1019	Day	5.598901099	\$28,939,600
Dredge Monitoring (Water Quality)	1019	Day		\$6,114,000
Sediment Removal QA	1019	Day		\$2,445,600
Piping	95,000	ft		\$6,365,000
Road Crossings	12	ea		\$600,000
Booster Pumps	4	ea		\$10,190,000
Winter Over All Equipment	6	yr		\$1,710,000
Site Restoration	1	LS		\$600,000
Direct Capital:				\$76,285,000
Engineering, Procurement &	9,154,200			
Contractor Overhead/Profit:			11,442,750	

\$96,900,000

SEDIMENT DEWATERING (GRAVITY)

Capital Items Land Lease or Purchase Mobilization Clear and Grub Berm Construction	,	Quantity 4,491,228 1 4,491,228 87,910	Units sf LS sf cy		Cost \$8,084,210 \$20,000 \$206,209 \$527,458
Rough Grading Liner Placement Demob/Disposal Regrade Seed/Sod		4,491,228 4,491,228 1 87,910 499,025	sf sf LS cy sy		\$1,122,807 \$6,736,842 \$10,000 \$527,458 \$499,025
	Direct Capital:				\$17,734,010
	Engineering, Procurement & Constr	ruction Manageme	nt:		2,128,081
	Total Capital:				\$19,900,000
		WATER TR	EATMENT		
Capital Items Unit Purchase Water Treatment (Inclu Water Treatment QA Piping	ding Operator)	Quantity 3,110 4,562,927,820 1,019 95,000	Units gpm gal Day ft		Cost \$2,586,470 \$1,825,171 \$407,600 \$6,365,000
	Direct Capital:				\$11,184,241
	Engineering, Procurement & Consti	ruction Manageme	ent:		1,342,109
	Total Capital: SEDIMENT TREATMENT	Γ (VITRIFICA	TION 2x375	5 t Standalone Storage Units)	\$12,500,000
Capital Items Sediment Treatment Soil Loading Soil Hauling	Direct Capital: Engineering, Procurement & Consti	Quantity 6,930,133 6,930,133 6,930,133 ruction Manageme	Units ton ton ton		Cost \$166,323,203 \$19,404,374 \$8,121,250 \$193,848,826 \$23,261,859
	Total Capital:				\$217,100,000
	IN	STITUTION	AL CONTRO	DLS	
Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Constr	ruction Manageme	nt:		\$5,000 600
	Total Capital:				\$5,600
Present Worth of Long-term Monitoring	f Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term	O&M Costs			\$4,513,889
	Total Project Capital and O&M	Cost			\$4,500,000

BAYPORT CLOSURE

Capital Items Clean Soil Cap Seeding Mitigation		Quantity 2,178,000 2,178,000 450	Units cy sy acre		Cost \$21,780,000 \$2,178,000 \$4,500,000
	Present Worth of Direct Capital: Engineering, Procurement & Constru	ction Manageme	nt:		\$2,766,749 \$332,010
	Total Capital:				\$3,098,759
Present Worth	of Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	972	\$14,628
Long-term Monitoring			40	63,194	\$950,842
Long-term O&M			40	6,025	\$90,659
	Total Present Worth, Longer Term O	&M Costs			\$1,056,130
	Total Project Capital and O&M Co	ost			\$4,200,000
	TOTAL COST				\$355,100,000

ALTERNATIVE F: Cap Sediment to Maximum Extent Possible, Dredge to CDF and Off-site Disposal

CDF CONSTRUCTION

Capital Items		Quantity	Units		Cost
Land Lease or Purchase	9	2,700,000	sf		\$4,860,000
Shot Rock/Rip Rap		9,600	lf		\$6,816,000
Sheetpile Placement		288,000	sf		\$5,472,000
Clean Soil Cap		205,000	cy		\$2,050,000
Seeding		300,000	sy		\$300,000
Mitigation		62	acre		\$619,835
	Direct Capital:				\$20,117,835
	Engineering, Procurement & Const	ruction Managem	ent:		\$2,414,140
	Total Capital:				\$22,531,975
Present Worth	of Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	10,000	\$150,463
Long-term Monitoring			40	650,000	\$9,780,093
Long-term O&M			40	450,639	\$6,780,456
	Total Present Worth, Longer Term	O&M Costs			\$16,711,012
	Total Project Capital and O&M	Cost			\$39,200,000

CAPPING

Capital Items	Quantity	Units		Cost
Mobilization/Site Prep	1	LS		\$200,000
Sand Purchase	1,645,602	tons		\$9,873,614
Sand Placement	1,175,430	cy		\$7,052,582
Cobble Purchase and Placemen	t 705,258	cy		\$21,157,745
Cap Placement QA	1	LS		\$100,000
Direc	t Capital:			\$38,383,942
Engin	eering, Procurement & Construction Manage	ment:		4,606,073
Total	Capital:			\$42,990,015
Present Worth of Longo Monitoring/O&M	er Term Operating Costs	Years	Annual Cost	
Long-term Monitoring		40	\$400,000	\$6,018,519
Long-term O&M		40	\$859,800	\$12,936,810
Total	Present Worth, Longer Term O&M Costs			\$18,955,329
Total	Project Capital and O&M Cost			\$61,900,000

SEDIMENT REMOVAL (MECHANICAL DREDGING)

	SEDIMEN	REMOVAL	(MECHANI	CAL DREDGING)	
Capital Items		Quantity	Units		Cost
Mobilization - Equipm	nent and Silt Curtain	3	LS		\$1,470,000
Watertight Barges		4	ea		\$400,000
Offload Stockpile Are	a Prep.	1	LS		\$75,000
Dredging - 12 hour sh		2,130	Day		\$36,210,000
Dredge Monitoring (V		2,130	Day		\$6,390,000
Sediment Removal QA		2,130	Day		\$2,556,000
Offload Crane Mobiliz Site Restoration	zation	1 1	LS ea		\$50,000 \$500,000
Site Restoration		1	Ca		\$300,000
	Direct Capital:				\$47,651,000
	Engineering, Procurement & Cons	truction Managem	ent:		5,718,120
	Contractor Overhead/Profit:				7,147,650
	Total Capital:				\$60,500,000
		WATER	TREATME	NT	
Capital Items		Quantity	Units		Cost
Unit Purchase		287	gpm		\$570,498
Water Treatment (Incl	udes Operator)	255,360,134	gal		\$102,144
Water Treatment QA		1,445	day		\$289,000
	Direct Capital:				\$961,642
	Engineering, Procurement & Cons	truction Managem	ent:		115,397
	Total Capital:				\$1,100,000
	SEDIMENT DISPOS.	AL (Existing N	R 500 Comr	nercial Disposal Facility)	
Conital Itama		Quantity	Units	•	Cost
Capital Items		Quantity			
Solidification		1,997,673	ton		\$49,941,825
Lime Purchase		199,768	ton		\$11,986,080
Soil Loading		1,997,673	ton		\$5,593,484
Soil Hauling		1,997,673	ton		\$9,364,092
Tipping Fees (non-TS	CA)	1,745,777	ton		\$75,068,429
Tipping Fees (TSCA)		251,896	ton		\$13,854,257
	Direct Capital:				\$165,808,168
	Engineering, Procurement & Cons	truction Managem	ent:		19,896,980
	Total Capital:				\$185,700,000
		INSTITUTIO	NAL CONT	TROLS	
C : IF					~ .
Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital:				\$5,000
	Engineering, Procurement & Cons	truction Managem	ent:		600
	Total Capital:				\$5,600
	of Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring	g (no action)		40	\$300,000	\$4,513,889
	Total Present Worth, Longer Term	O&M Costs			\$4,513,889

Total Project Capital and O&M Cost

\$4,500,000

BAYPORT CLOSURE

Capital Items Clean Soil Cap Seeding Mitigation		Quantity 2,178,000 2,178,000 450	Units cy sy acre		Cost \$21,780,000 \$2,178,000 \$4,500,000
	Present Worth of Direct Capital: Engineering, Procurement & Constru	ction Manageme	ent:		\$2,766,749 \$332,010
	Total Capital:				\$3,098,759
Present Worth	of Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	972	\$14,628
Long-term Monitoring			40	63,194	\$950,842
Long-term O&M			40	6,025	\$90,659
	Total Present Worth, Longer Term O	&M Costs			\$1,056,130
	Total Project Capital and O&M Co	ost			\$4,200,000
	TOTAL COST				\$357,100,000
	TOTAL COST				\$357,100,00

BASIS FOR PRELIMINARY COST ESTIMATES

SEDIMENT REMEDIATION FOX RIVER, WISCONSIN

DE PERE TO GREEN BAY

Action Level - 5,000 ppb

Material Hamilton Assessed				
Material Handling Assumptions: Volume > 5000 ppb	4,517,391 cy	715 ac	3,448,390 m3	Acres corresponds to dredge
Volume > 125 ppb	6,868,500 cy	/13 ac	5,243,130 m3	footprint area
Volume > 250 ppb	6,449,065 cy		4,922,950 m3	rootprint area
Volume > 500 ppb	6,169,458 cy		4,709,510 m3	
Volume > 1000 ppb	5,879,529 cy		4,488,190 m3	
Volume > 50,000 ppb	240,778 cy		183,800 m3	
Solids Specific Gravity	2.36		330,000	
Fresh Water Density	62.4 lb/ft3			
In Situ Density	33.8% w/w	17.8% v/v	1.05 tons per cy	
Slurry Density (20% in situ)	8.0% w/w	3.6% v/v	0.88 tons per cy	Ogden Beeman
Dewatered Density (settling pond)	30% w/w	15.4% v/v	1.02 tons per cy	Montgomery Watson
Dewatered Density (Hydraulic Dredging and CDF)	50.0% w/w	29.8% v/v	1.18 tons per cy	Foth & VanDyke
Dewatered Density (Mechanical Dredging)	33.8% w/w	17.8% v/v	1.05 tons per cy	•
Treated Density	93.4% w/w	60.0% v/v	1.28 tons per cy	
CDF Capacity	2,136,771 cy	in situ	974,801 m3	
HTTD Treatment Capacity	1,577,177 cy	in situ	1,650,000 tons	
Cap Volume	1,415,350 cy		1,080,420 m3	
Vitrification Treatment Capacity	9,106,166 cy	in situ	6440000.00 tons	
Cost Estimating Parameters & Methodology:	(00/			
Interest Rate	6.0%			N di i
Sales Tax	5.5%			Not Used
Engineering, Procurement and Construction Mgmt	12.0%			
Contractor Overhead and Profit - Dredging Only	15.0%			
<u>Dredging</u>	£2.000 I			
Dredge Monitoring (Water Quality)	\$3,000 per d	*		
Sediment Removal QA	\$1,200 per d	•		O-d P
Debris Sweep	\$16,000 per a	cre		Ogden Beeman
Hydraulic - 2 12-inch Cutterheads	£202 400 I C			0.1.7
Site Preparation	\$803,400 LS			Ogden Beeman
Mobilization - Equipment Mobilization - Silt Curtain	\$1,135,000 LS \$35,000			Ogden Beeman
		.:a		Ogden Beeman Ogden Beeman
Shift Rate (12 hours) Dredge Rate	\$14,200 per sl	situ per 12 hour shift		Ogden Beeman
-				
Winter Over Equipment Site Restoration	\$285,000 per y	redge launch site		Ogden Beeman
Length of Piping	95,000 ft	reage fautien site	18 mi	Distance to Town of Holland (map
Length of 1 lping	95,000 11		16 IIII	provided by Fred Swed). 11 mi of
				hard piping plus 7 mi of floating
				pipe
Piping Purchase/Installation	\$67 per fi			Ogden Beeman
Number of Road Crossings	12 each			pj, review map
Cost per Road Crossing	\$50,000 per c	rossing		pj, review map
Number of Booster Pumps	4 each			Ogden Beeman
Booster Pump Cost	\$2,500 per d	av		Ogden Beeman
Mechanical - 8 cy bucket	1,7.1.			
Dock Construction	\$400,000 LS			pj
Mobilization - Equipment	\$455,000 per d	redge		Ogden Beeman
Mobilization - Silt Curtain	\$35,000 LS	-		Ogden Beeman
Mobilization - Watertight Barge	\$100,000 ea			Ogden Beeman - JAG estimate
Shift Rate (10 hours)	\$17,000 per s	nift		Ogden Beeman
Dredge Rate	1900 cy in	situ per 10 hour shift		Ogden Beeman
Offload Stockpile Area Prep.	\$75,000 per a	rea		pj
Free Water per cy Dredged (10%)	20 gal			Ogden Beeman
Offload Crane Mobilization	\$50,000 LS			pj
Site Restoration	\$500,000 LS			рj
High Temperature Thermal Desorption				
Setup Staging Area	\$50,000			pj
Mobilization/Site Prep	\$150,000			Maxymillian
Sediment Treatment QA	\$2 per to	on		
Ratio of Amending Sand Volume to Dredge Vol.	0.25 :1			
Sand Purchase and Deliver	\$6 per to			Ole
Blending	\$25 per to			Ole
HTTD (includes off-gas treatment)	\$75 per to	on		Maxymillian
Stack Testing	\$50,000 LS			Maxymillian
Place Treated Material	\$3 per to	on		
Vitrification	***			
Capital Costs	\$36,000,000 LS			Unit Cost Study- Minergy
Operating Costs	\$6,800,000 per y			Unit Cost Study- Minergy
Vitrification (Unit Cost includes Cap and Oper Costs)	\$24.0 per to	on		Unit Cost Study- Minergy

Costs-R4.xls

Capping					
Mobilization/Site Prep	\$200,000 12,497,672	af	1,161,100	m2	Ogden Beeman
Area Sand Cap Depth		feet	1,101,100	IIIZ	
Sand Purchase		per ton			Ole
Placement Rate		per cy			Ogden Beeman
Sand Density		tons per cy			
Armored Cap Depth Cobbles		feet per cy			Means
Sand Density		tons per cy			ivicans
Cap Placement QA	\$100,000				Ogden Beeman
Long-term O&M		of capital			pj
Long-term Monitoring	\$400,000	per year			Anne LTM
Nearshore CDF Land Lease or Purchase	\$1.90	per sf	Bayport		Baird
Length	9,600				Baird
Capping Volume	205,000		2,178,000		Baird
Seeding Area	300,000	sy	2,178,000		Baird
Sheetpile Wall Length	9,600	lf			based on bathymetry
Sheetpile Depth	30				pj
Sheetpile Cost		per sf			Baird
Shot Rock Berm Rip Rap		per lf per lf			Baird
Clean Soil Cap		per cy			pj Baird
Seeding		per sy			Baird
Mitigation		per acre			Tim
		per year			Tim
Long-term Monitoring	\$650,000				Anne LTM
Long-term O&M	2%	of capital			pj
Solidification					
Percent Lime	10.0%	(w/w)			Montgomery Watson
Lime		per ton	Mixing	\$25 per ton	pj, pug mill mixing
		_	-	-	
Dewatering - Mechanical					
Mobilization	\$100,000				pj
Holding Pond-Centrifuge	\$80	per bone dry ton			Global Dewatering
Dewatering - Upland Pond (2 cells)					
Land Lease or Purchase	\$1.80	per sf			Ole
Area	4,491,228		103.10		2 days slurry + 13 wk solids * 2
					cells * 2 shifts per day
Perimeter	8,477		2119.251741		assume square
Depth of Material in Dewatering Cell		feet hours			based on size at Arrowhead Park Not Used
Cell Retention Time Cell Depth		feet			Not Osed
Mobilization	\$20,000				
Clear and Grub		per acre			pj
Berm Volume		cy per lf			2:1 slope, 8-foot top
Berm Construction		per cy			рj
Rough Grading		per sf			pj
Alphalt Liner Demob/Disposal	\$1.50 \$10,000	per sf			pj, 2 2-inch lifts pj
Regrade Berm Soils		per cy			pj
Seed/Sod		per sy			Baird
Water Treatment					
Flow Rate (3 Mechanical Dredges)	57 \$216,590	gpm			assume operate 24/7
Unit, Purchase (3 Mechanical Dredges) Flow Rate (3 Mechanical Dredges to CDF)					pj assume operate 24/7
Unit, Purchase (3 Mechanical Dredges to CDF)	\$570,498	gpm LS			pj
Flow Rate (2 Hydraulic Dredges)	3,563				assume operate 24/7
Unit, Purchase (Hydraulic Dredge)	\$2,586,470				рj
Flow Rate (2 Hydraulic Dredges; settling pond)	3,110				assume operate 24/7
Flow Rate (mechanical dewatering)	3,563				
Unit, Purchase (mechanical dewatering) Water Treatment (Including Operator)	\$2,586,470 \$0.40	LS per 1,000 gallon:			ni
Water Treatment (Including Operator) Water Treatment QA		per 1,000 gallons			pj pj, 1 sample/day
Length of piping for treated water discharge	20,000				Distance from town of Holland to
· ·					river per map provided by Fred
<u>Disposal</u>					Swed
Existing NR 500 Commercial Disposal Facility	42.00				
Load Soil for Hauling Round-trip Hauling		per ton hours			pj ni
Round-trip Hauling Round-trip Hauling (to Vitrification Facility)		hours			pj pj
Tipping Fee (non-TSCA)		per ton			St. Paul
Tipping Fee (TSCA)		per ton			St. Paul
Truck Rate	\$75	per hour			pj
Truck Load		tons			рj
Conveyer System Construction	1,000,000	LS			pj
New Landfill Disposal (Dedicated NR 500 Monofill) Landfill Construction	\$17,092,830				
Local Siting Fee		per cy			
Closure Cap	\$100,000				
Operating Cost	\$500,000				
Post-closure Monitoring		per year			

Institutional Controls		
Public Education Program	\$100,000	pj
O&M Plans	\$20,000	pj
Deed Restrictions	\$5,000	pj
Annual Costs		
Public Education Program	\$30,000	pj
Maintaining O&M Plans	\$800	pj
Reporting	\$20,000	pj
Long-term Monitoring	\$600,000	Anne LTM
Long-term Monitoring (no action)	\$300,000	Anne LTM

ALTERNATIVE A: No Action

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Constru	ction Managem	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth of Longer Term Operating Costs Long-term Monitoring (no action)			Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term O	&M Costs			\$4,513,889
	Total Project Capital and O&M Co	ost			\$4,500,000
	TOTAL COST				\$4,500,000

ALTERNATIVE B: Monitored Natural Recovery

MONITORING/INSTITUTIONAL CONTROLS

Capital Items	Quantity	Units		Cost
Public Education Program	1	LS		\$100,000
O&M Plans	1	LS		\$20,000
Deed Restrictions	1	LS		\$5,000
Direct Capital:				\$125,000
Engineering, Procurement	& Construction Managem	ent:		15,000
Total Capital:				\$140,000
Present Worth of Longer Term Operating O	Costs	Years	Annual Cost	
Long-term Monitoring		40	\$600,000	\$9,027,778
Public Education Program		40	\$30,000	\$451,389
Maintaining O&M Plans		40	\$800	\$12,037
Reporting		40	\$20,000	\$300,926
Total Present Worth, Longo	er Term O&M Costs			\$9,792,130
Total Project Capital and	O&M Cost			\$9,900,000
TOTAL COST				\$9,900,000

ALTERNATIVE C1: Dredge Sediment With Disposal at Existing NR 500 Commercial Disposal Facility (Passive Dewatering)

SEDIMENT REMOVAL (MECHANICAL DREDGING)

Capital Items	Quantity	Units		Cost
Mobilization - Equipment and Silt Curtain	3	LS		\$1,470,000
Watertight Barges	4	ea		\$400,000
Offload Stockpile Area Prep.	1	LS		\$75,000
Dredging - 12 hour shifts	2,378	Day	18.29230769	\$40,426,000
Dredge Monitoring (Water Quality)	2,378	Day		\$7,134,000
Sediment Removal QA	2,378	Day		\$2,853,600
Offload Crane Mobilization	1	LS		\$50,000
Site Restoration	1	ea		\$500,000
Direct Capital:				\$52,908,600
Engineering, Procurement &	Construction Managem	ent:		6,349,032
Contractor Overhead/Profit:				7,936,290
Total Capital:				\$67,200,000

WATER TREATMENT

G 1.17		O 41	** *.		
Capital Items Unit Purchase		Quantity 57	Units gpm		Cost \$216,590
Water Treatment (Inclu	des Operator)	91,233,227	gal		\$36,493
Water Treatment QA		1,110	day		\$222,000
	Direct Capital:				\$475,083
	Engineering, Procurement & Const	ruction Managem	ent:		57,010
	Total Capital:				\$500,000
	SEDIMENT DISPOSA	AL (Existing N	R 500 Comi	mercial Disposal Facility)	
			** *		
Capital Items		Quantity	Units		Cost
Solidification Lime Purchase		4,725,974 472,598	ton ton		\$118,149,341
Soil Loading		4,725,974	ton		\$28,355,880 \$13,232,726
Soil Hauling		4,725,974	ton		\$22,153,001
Tipping Fees (non-TSC	(A)	4,474,078	ton		\$192,385,360
Tipping Fees (TSCA)	,	251,896	ton		\$13,854,253
			***		¥ - = , = = - ; = - = -
	Direct Capital:				\$388,130,561
	Engineering, Procurement & Const	ruction Managem	ent:		46,575,667
	Total Capital:				\$434,700,000
		INSTITUTIO	NAL CONT	TROLS	
Capital Items		Quantity	Units		Cost
Deed Restrictions		1	LS		\$5,000
	Direct Capital: Engineering, Procurement & Const	ruction Managem	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth o	of Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring			40	\$300,000	\$4,513,889
	Total Present Worth, Longer Term	O&M Costs			\$4,513,889
	Total Project Capital and O&M	Cost			\$4,500,000
		BAYPORT	CLOSURE		
Capital Items		Quantity	Units		Cost
Clean Soil Cap		2,178,000	cy		\$21,780,000
Seeding		2,178,000	sy		\$2,178,000
Mitigation		450	acre		\$4,500,000
	Present Worth of Direct Capital: Engineering, Procurement & Const	ruction Managem	ent:		\$2,766,749 \$332,010
	Total Capital:				\$3,098,759
Present Worth o	of Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	972	\$14,628
Long-term Monitoring			40	63,194	\$950,842
Long-term O&M			40	6,025	\$90,659
	Total Present Worth, Longer Term	O&M Costs			\$1,056,130
	Total Project Capital and O&M	Cost			\$4,200,000
	TOTAL COST				\$511,100,000

ALTERNATIVE C2A: Dredge Sediment with Combined Dewatering and Disposal Facility

SEDIMENT REMOVAL (2 12-INCH CUTTERHEADS)

	SEDIMENT	REMOVAL (2	12-INCH C	UTTERHEADS)	
Capital Items		Quantity	Units		Cost
Site Preparation		2	LS		\$1,606,800
Mobilization - Equipm	ent and Silt Curtain	1	LS		\$1,170,000
Debris Sweep		715	acre		\$11,440,000
Dredging - 2 12 hour s		783	Day	4.302197802	\$22,237,200
Dredge Monitoring (W		783	Day		\$4,698,000
Sediment Removal QA	A.	783	Day		\$1,879,200
Piping Pand Crassings		95,000 12	ft		\$6,365,000
Road Crossings Booster Pumps		4	ea ea		\$600,000 \$7,830,000
Winter Over All Equip	oment	5	yr		\$1,425,000
Site Restoration		1	LS		\$600,000
	Direct Capital:				\$59,851,200
	Engineering, Procurement & Con Contractor Overhead/Profit:	struction Manageme	ent:		7,182,144 8,977,680
	Contractor Overnead/11ont.				6,777,000
	Total Capital:				\$76,000,000
		WATER TR	EATMENT		
Capital Items		Quantity	Units		Cost
Unit Purchase		3,563	gpm		\$2,586,470
Water Treatment (Incl	uding Operator)	4,016,428,155	gal		\$1,606,571
Water Treatment QA		783	Day		\$313,200
Piping		20,000	ft		\$1,340,000
	Di la				05.046.041
	Direct Capital:				\$5,846,241
	Engineering, Procurement & Con	struction Manageme	ent:		701,549
	Total Capital:				\$6,500,000
	SEDIMEN	Г DISPOSAL (I	edicated NI	R 500 Monofill)	
Capital Items		Quantity	Units		Cost
Landfill Construction		1	LS		\$17,092,830
Local Siting Fee		2,699,709	cy		\$13,498,544
Closure		84	acres		\$8,366,866
Closure		0.	deres		\$0,500,000
	Direct Capital:				\$38,958,240
	Engineering, Procurement & Con	struction Manageme	ent:		4,674,989
	Total Capital:				\$43,600,000
	of Longer Term Operating Costs		Years	Annual Cost	62 (80 044
Operations Post Closure Monitoria	ng.		10 40	\$500,000 \$30,000	\$3,680,044 \$252,053
1 ost Closure Wollton	ıığ		40	\$30,000	\$232,033
	Total Present Worth, Longer Terr	n O&M Costs			\$3,932,097
	Total Project Capital and O&M	1 Cost			\$47,500,000
		INSTITUTIO	NAL CONT	rpoi s	
		INSTITUTIO	TALL COTT	ROLS	
Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
		-			
	Direct Capital: Engineering, Procurement & Con	struction Manageme	ent.		\$5,000 600
	Total Capital:	struction manageme	art.		\$5,600
Present Worth Long-term Monitoring	of Longer Term Operating Costs		Years 40	Annual Cost \$300,000	\$4,513,889
Long-term Monitoring	(no action)		40	\$300,000	\$4,313,889
	Total Present Worth, Longer Terr	n O&M Costs			\$4,513,889
	Total Project Capital and O&M	1 Cost			\$4,500,000
	- Jan 1 Toject Capital and OCH				34,500,000

BAYPORT CLOSURE

		BAYPORT	CLOSURE		
Capital Items		Quantity	Units		Cost
Clean Soil Cap		2,178,000	cy		\$21,780,000
Seeding		2,178,000	sy		\$2,178,000
Mitigation		450	acre		\$4,500,000
	Present Worth of Direct Capital:				\$2,766,749
	Engineering, Procurement & Const	truction Managem	ent:		\$332,010
	Total Capital:				\$3,098,759
Present Worth o	f Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	972	\$14,628
Long-term Monitoring			40	63,194	\$950,842
Long-term O&M			40	6,025	\$90,659
	Total Present Worth, Longer Term	O&M Costs			\$1,056,130
	Total Project Capital and O&M	Cost			\$4,200,000
	TOTAL COST				\$138,700,000
ALTERNATIVE C2B	: Dredge Sediment with Sepa	arate Dewateri	ng and Dispo	osal Facilities	
	SEDIMENT I	REMOVAL (2	12-INCH CU	UTTERHEADS)	

Capital Items	Quantity	Units		Cost
Site Preparation	2	LS		\$1,606,800
Mobilization - Equipment and Silt Curtain	1	LS		\$1,170,000
Debris Sweep	715	acre		\$11,440,000
Dredging - 2 12 hour shifts/day	783	Day	4.302197802	\$22,237,200
Dredge Monitoring (Water Quality)	783	Day		\$4,698,000
Sediment Removal QA	783	Day		\$1,879,200
Piping	95,000	ft		\$6,365,000
Road Crossings	12	ea		\$600,000
Booster Pumps	4	ea		\$7,830,000
Winter Over All Equipment	5	yr		\$1,425,000
Site Restoration	1	LS		\$600,000

 Direct Capital:
 \$59,851,200

 Engineering, Procurement & Construction Management:
 7,182,144

 Contractor Overhead/Profit:
 8,977,680

Total Capital: \$76,000,000

SEDIMENT DEWATERING (GRAVITY - NR 213)

228 sf LS	\$8,084,210
1.0	
LO	\$20,000
228 sf	\$206,209
10 cy	\$527,458
228 sf	\$1,122,807
228 sf	\$6,736,842
LS	\$10,000
10 cy	\$527,458
25 sy	\$499,025
1,2	,228 sf 10 cy ,228 sf ,228 sf ,LS 10 cy

 Direct Capital:
 \$17,734,010

 Engineering, Procurement & Construction Management:
 2,128,081

Total Capital: \$19,900,000

WATER TREATMENT

Capital Items	Quantity	Units	Cost
Unit Purchase	3,110	gpm	\$2,586,470
Water Treatment (Including Operator)	3,505,812,959	gal	\$1,402,325
Water Treatment QA	783	Day	\$313,200
Piping	20,000	ft	\$1,340,000
Direct Capital:			\$5,641,995
Engineering, Procurement	& Construction Manageme	nt:	677,039

Total Capital: \$6,300,000

SEDIMENT DISPOSAL (Dedicated NR 500 Monofill)

Capital Items	Qua	antity	Units		Cost
Solidification		4,597	ton		\$133,114,924
Lime Purchase		,460	ton		\$31,947,600
Sediment Loading		4,597	ton		\$14,908,872
Sediment Hauling		4,597	ton		\$24,959,048
Landfill Construction		1 9,709	LS		\$17,092,830
Local Siting Fee Closure		9,709 34	cy acres		\$13,498,544 \$8,366,866
Closule	C)4	acres		\$8,500,600
	Direct Capital:				\$243,888,684
	Engineering, Procurement & Construction N	Managem	ent:		29,266,642
	Total Capital:				\$273,200,000
	f Longer Term Operating Costs		Years	Annual Cost	
Operations	_		10 40	\$500,000	\$3,680,044
Post Closure Monitoring	3		40	\$30,000	\$252,053
	Total Present Worth, Longer Term O&M C	osts			\$3,932,097
	Total Project Capital and O&M Cost				\$277,100,000
	INSTITU	U TION .	AL CONTRO	OLS	
Capital Items	Ouz	antity	Units		Cost
Deed Restrictions	_	1	LS		\$5,000
	Direct Capital:				\$5,000
	Engineering, Procurement & Construction M	Managem	ent:		600
	Total Capital:				\$5,600
Present Worth of Long-term Monitoring (f Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term O&M C	osts			\$4,513,889
	Total Project Capital and O&M Cost				\$4,500,000
	BAY	YPORT	CLOSURE		
Capital Items		antity	Units		Cost
Clean Soil Cap		8,000	cy		\$21,780,000
Seeding Mitigation	,	8,000 50	sy acre		\$2,178,000 \$4,500,000
	Present Worth of Direct Capital: Engineering, Procurement & Construction N	Managem	ent:		\$2,766,749 \$332,010
	Total Capital:	J			\$3,098,759
Present Worth of	f Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	972	\$14,628
Long-term Monitoring			40	63,194	\$950,842
Long-term O&M			40	6,025	\$90,659
	Total Present Worth, Longer Term O&M C	osts			\$1,056,130
	Total Project Capital and O&M Cost				\$4,200,000
	TOTAL COST				\$388,000,000

ALTERNATIVE C3: Dredge Sediment With Disposal at Existing NR 500 Commercial Disposal Facility (Mechanical Dewatering)

SEDIMENT REMOVAL (2 - 12-inch CUTTERHEADS)

Capital Items	Quantity	Units		Cost
Site Preparation	2	LS		\$1,606,800
Mobilization - Equipment and Silt Curtain	1	LS		\$1,170,000
Debris Sweep	715	acre		\$11,440,000
Dredging - 2 12 hour shifts/day	783	Day	4.302197802	\$22,237,200
Dredge Monitoring (Water Quality)	783	Day		\$4,698,000
Sediment Removal QA	783	Day		\$1,879,200
Winter Over All Equipment	5	yr		\$1,425,000
Site Restoration	1	LS		\$600,000
Direct Capital:				\$45,056,200
Engineering, Procurement & Cor	nstruction Managem	ent:		5,406,744
Contractor Overhead/Profit:				6,758,430
Total Capital:				\$57,200,000

SEDIMENT DEWATERING (MECHANICAL)

Capital Items Mobilization/Site Prep Dewatering	Quantity 1 1,597,379	Units LS bdt	Cost \$100,000 \$127,790,327
	Direct Capital:		\$127,890,327
	Engineering, Procurement & Construction Management	ent:	15,346,839
	Total Capital:		\$143,200,000

WATER TREATMENT

Capital Items	Quantity	Units	Cost
Unit Purchase	3,563	gpm	\$2,586,470
Water Treatment (Includes Operator)	4,016,428,155	gal	\$1,606,571
Water Treatment QA	2,193	day	\$438,600
Direct Capital:			\$4,631,641
Engineering, Proc	curement & Construction Managemen	nt:	555,797
Total Capital:			\$5,200,000

SEDIMENT DISPOSAL (Existing NR 500 Commercial Disposal Facility)

Capital Items	Quantity	Units	Cost
Soil Loading	3,194,758	ton	\$8,945,323
Soil Hauling	3,194,758	ton	\$14,975,429
Tipping Fees (non-TSCA)	3,024,477	ton	\$130,052,503
Tipping Fees (TSCA)	170,281	ton	\$9,365,475
Direct Capital:			\$163,338,730
Engineering, P	rocurement & Construction Manageme	nt:	19,600,648

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Construct	ion Manageme	nt:		\$5,000 600
	Total Capital:				\$5,600
Present Worth Long-term Monitoring	of Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term O&	M Costs			\$4,513,889
	Total Project Capital and O&M Cos	t			\$4,500,000

Total Capital:

\$182,900,000

BAYPORT CLOSURE

Capital Items Clean Soil Cap Seeding Mitigation	Present Worth of Direct Capital: Engineering, Procurement & Construc	Quantity 2,178,000 2,178,000 450 tion Management	Units cy sy acre		Cost \$21,780,000 \$2,178,000 \$4,500,000 \$2,766,749 \$332,010
	Total Capital:				\$3,098,759
Present Worth of Mitigation Long-term Monitoring Long-term O&M	Longer Term Operating Costs		Years 40 40 40	Annual Cost 972 63,194 6,025	\$14,628 \$950,842 \$90,659
	Total Present Worth, Longer Term O&	M Costs			\$1,056,130
					4-,,,,,,
	Total Project Capital and O&M Cos	st			\$4,200,000
ALTERNATIVE D: D	TOTAL COST bredge Sediment, CDF and Off-	site Disposa	I		\$397,200,000

SEDIMENT REMOVAL (MECHANICAL DREDGING)

Capital Items	Quantity	Units	Cost
Mobilization - Equipment and Silt Curtain	3	LS	\$1,470,000
Watertight Barges	4	ea	\$400,000
Offload Stockpile Area Prep.	1	LS	\$75,000
Dredging - 12 hour shifts	2,378	Day	\$40,426,000
Dredge Monitoring (Water Quality)	2,378	Day	\$7,134,000
Sediment Removal QA	2,378	Day	\$2,853,600
Offload Crane Mobilization	1	LS	\$50,000
Site Restoration	1	ea	\$500,000
Direct Capital:			\$52,908,600
Engineering, Procurement & C	6,349,032		
Contractor Overhead/Profit:	_		7,936,290
Total Capital:			\$67,200,000

CDF CONSTRUCTION

Total Project Capital and O&M Cost

Capital Items	Quantity	Units		Cost
Land Lease or Purchase	2,700,000	sf		\$4,860,000
Shot Rock/Rip Rap	9.600	lf		\$6,816,000
Sheetpile Placement	288,000	sf		\$5,472,000
Clean Soil Cap	205,000	cy		\$2,050,000
Seeding	300,000			\$300,000
E	62	sy		\$619,835
Mitigation	62	acre		\$019,833
Direct Capita	l·			\$20,117,835
	Procurement & Construction Manageme	ent:		\$2,414,140
Engineering,	i rocurement & construction managem	ont.		\$2,414,140
Total Capita	l:			\$22,531,975
Present Worth of Longer Term	Operating Costs	Years	Annual Cost	
Mitigation		40	10,000	\$150,463
Long-term Monitoring		40	650,000	\$9,780,093
Long-term O&M		40	450,639	\$6,780,456
3			,	,,
Total Present	Worth, Longer Term O&M Costs			\$16,711,012

WATER TREATMENT

Capital Items	Quantity	Units	Cost
Unit Purchase	287	gpm	\$570,498
Water Treatment (Includes Operator)	264,874,779	gal	\$105,950
Water Treatment QA	1,110	day	\$222,000
Direct Capital:			\$898,448
Engineering, Procurement & Construction Management:			107,814
Total Capital:			\$1,000,000

\$39,200,000

SEDIMENT DISPOSAL (Existing NR 500 Commercial Disposal Facility)

Capital Items	Quantity	Units	Cost
Solidification	2,490,541	ton	\$62,263,525
Lime Purchase	249,055	ton	\$14,943,300
Soil Loading	2,490,541	ton	\$6,973,515
Soil Hauling	2,490,541	ton	\$11,674,411
Tipping Fees (non-TSCA)	2,238,645	ton	\$96,261,755
Tipping Fees (TSCA)	477,989	ton	\$26,289,406
Direct Capital:			\$218,405,911
Engineering, Procurement & Construction Management:			26,208,709
Total Capital:			\$244,600,000

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Construc	ction Manageme	ent:		\$5,000 600
Total Capital:				\$5,600	
Present Worth C Long-term Monitoring	of Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term Od	&M Costs			\$4,513,889
	Total Project Capital and O&M Co	st			\$4,500,000

BAYPORT CLOSURE

Capital Items		Quantity	Units		Cost
Clean Soil Cap		2,178,000	cy		\$21,780,000
Seeding		2,178,000	sy		\$2,178,000
Mitigation		450	acre		\$4,500,000
	Present Worth of Direct Capital:				\$2,766,749
Engineering, Procurement & Construction Management:				\$332,010	
	Total Capital:				\$3,098,759
Present Worth	of Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	972	\$14,628

Present Worth of Longer Term Operating Costs	Years	Annual Cost	
Mitigation	40	972	\$14,628
Long-term Monitoring	40	63,194	\$950,842
Long-term O&M	40	6,025	\$90,659
Total Present Worth, Longer Term O&M Costs			\$1,056,130
Total Project Capital and O&M Cost			\$4,200,000

TOTAL COST \$360,700,000

ALTERNATIVE E: Dredge Sediment and Thermal Treatment

SEDIMENT REMOVAL (2 - 12-inch CUTTERHEAD'S)

Capital Items	Quantity	Units		Cost
Site Preparation	2	LS		\$1,606,800
Mobilization - Equipment and Silt Curtain	1	LS		\$1,170,000
Debris Sweep	715	acre		\$11,440,000
Dredging - 2 12 hour shifts/day	783	Day	4.302197802	\$22,237,200
Dredge Monitoring (Water Quality)	783	Day		\$4,698,000
Sediment Removal QA	783	Day		\$1,879,200
Piping	95,000	ft		\$6,365,000
Road Crossings	12	ea		\$600,000
Booster Pumps	4	ea		\$7,830,000
Winter Over All Equipment	5	yr		\$1,425,000
Site Restoration	1	LS		\$600,000
Direct Capital:				\$59,851,200
Engineering Procurement &		7 182 144		

 Direct Capital:
 \$59,851,200

 Engineering, Procurement & Construction Management:
 7,182,144

 Contractor Overhead/Profit:
 8,977,680

Total Capital: \$76,000,000

SEDIMENT DEWATERING (GRAVITY)

Capital Items Land Lease or Purchase Mobilization Clear and Grub Berm Construction Rough Grading		Quantity 4,491,228 1 4,491,228 87,910 4,491,228	Units sf LS sf cy sf		Cost \$8,084,210 \$20,000 \$206,209 \$527,458 \$1,122,807
Liner Placement Demob/Disposal Regrade Seed/Sod		4,491,228 1 87,910 499,025	sf LS cy sy		\$6,736,842 \$10,000 \$527,458 \$499,025
	Direct Capital:				\$17,734,010
	Engineering, Procurement & Constr	ruction Manageme	nt:		2,128,081
	Total Capital:				\$19,900,000
		WATER TR	EATMENT		
Capital Items Unit Purchase Water Treatment (Inclu- Water Treatment QA Piping	ding Operator)	Quantity 3,110 3,505,812,959 783 95,000	Units gpm gal Day ft		Cost \$2,586,470 \$1,402,325 \$313,200 \$6,365,000
	Direct Capital:				\$10,666,995
	Engineering, Procurement & Constr	ruction Manageme	nt:		1,280,039
	Total Capital: SEDIMENT TREATMENT	Γ (VITRIFICA	TION 2x37	5 t Standalone Storage Units	\$11,900,000
Capital Items Sediment Treatment Soil Loading Soil Hauling	Direct Capital: Engineering, Procurement & Constr	Quantity 5,324,597 5,324,597 5,324,597 ruction Manageme	Units ton ton ton		Cost \$127,790,327 \$14,908,872 \$6,239,762 \$148,938,961 \$17,872,675
	Total Capital:				\$166,800,000
	IN	STITUTIONA	L CONTRO	OLS	
Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Consti	ruction Manageme	nt:		\$5,000 600
	Total Capital:				\$5,600
Present Worth o Long-term Monitoring (f Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term	O&M Costs			\$4,513,889
	Total Project Capital and O&M (Cost			\$4,500,000

BAYPORT CLOSURE

Capital Items Clean Soil Cap Seeding Mitigation		Quantity 2,178,000 2,178,000 450	Units cy sy acre		Cost \$21,780,000 \$2,178,000 \$4,500,000
	Present Worth of Direct Capital: Engineering, Procurement & Constru	ction Manageme	ent:		\$2,766,749 \$332,010
	Total Capital:				\$3,098,759
Present Worth of Longer Term Operating Costs Years Annual Cost					
Mitigation			40	972	\$14,628
Long-term Monitoring			40	63,194	\$950,842
Long-term O&M			40	6,025	\$90,659
	Total Present Worth, Longer Term O	&M Costs			\$1,056,130
	Total Project Capital and O&M Co	ost			\$4,200,000
	TOTAL COST				\$283,300,000

ALTERNATIVE F: Cap Sediment to Maximum Extent Possible, Dredge to CDF and Off-site Disposal

CDF CONSTRUCTION

Capital Items		Quantity	Units		Cost
Land Lease or Purchase	;	2,700,000	sf		\$4,860,000
Shot Rock/Rip Rap		9,600	1f		\$6,816,000
Sheetpile Placement		288,000	sf		\$5,472,000
Clean Soil Cap		205,000	cy		\$2,050,000
Seeding		300,000	sy		\$300,000
Mitigation		62	acre		\$619,835
	Direct Capital:				\$20,117,835
	Engineering, Procurement & Constr	ruction Managem	ent:		\$2,414,140
	Total Capital:				\$22,531,975
Present Worth o	f Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	10,000	\$150,463
Long-term Monitoring			40	650,000	\$9,780,093
Long-term O&M			40	450,639	\$6,780,456
	Total Present Worth, Longer Term	O&M Costs			\$16,711,012
	Total Project Capital and O&M (Cost			\$39,200,000

CAPPING

Capital Items Mobilization/Site Prep Sand Purchase Sand Placement	Quantity 1 1,080,046 771,461	Units LS tons cy		Cost \$200,000 \$6,480,275 \$4,628,768
Cobble Purchase and Placement Cap Placement QA	462,877	cy LS		\$13,886,303 \$100,000
Direct C	apital: ring, Procurement & Construction Managem			\$25,295,345 3,035,441
Total Ca	pital:			\$28,330,786
Present Worth of Longer Monitoring/O&M	Ferm Operating Costs	Years	Annual Cost	
Long-term Monitoring		40	\$400,000	\$6,018,519
Long-term O&M		40	\$566,616	\$8,525,468
	esent Worth, Longer Term O&M Costs			\$14,543,987 \$42,900,000
Total F	oject Capitai and O&W Cost			342,900,000

SEDIMENT REMOVAL (MECHANICAL DREDGING)

	SEDIMENT	REMOVAL	(MECHANI	CAL DREDGING)	
Capital Items		Quantity	Units		Cost
Mobilization - Equipn	nent and Silt Curtain	3	LS		\$1,470,000
Watertight Barges		4	ea		\$400,000
Offload Stockpile Are		1	LS		\$75,000
Dredging - 12 hour sh		1,633	Day		\$27,761,000
Dredge Monitoring (V		1,633	Day		\$4,899,000
Sediment Removal Q		1,633	Day		\$1,959,600
Offload Crane Mobiliz Site Restoration	zation	1 1	LS ea		\$50,000 \$500,000
Site Restoration		1	Ca		\$300,000
	Direct Capital:				\$37,114,600
	Engineering, Procurement & Const	truction Managem	ent:		4,453,752
	Contractor Overhead/Profit:				5,567,190
	Total Capital:				\$47,100,000
		WATER	TREATME	NT	
Capital Items		Quantity	Units		Cost
Unit Purchase	1.0.4	287	gpm		\$570,498
Water Treatment (Incl Water Treatment QA	udes Operator)	236,290,366 1,110	gal		\$94,516 \$222,000
water Treatment QA		1,110	day		\$222,000
	Direct Capital:				\$887,014
	Engineering, Procurement & Const	truction Managem	ent:		106,442
	Total Capital:				\$1,000,000
	SEDIMENT DISPOSA	AL (Existing N	R 500 Com	nercial Disposal Facility)	
Capital Items		Quantity	Units		Cost
Solidification		1,009,840	ton		\$25,246,000
Lime Purchase		100,984	ton		\$6,059,040
Soil Loading		1,009,840	ton		\$2,827,552
Soil Hauling		1,009,840	ton		\$4,733,625
Tipping Fees (non-TS	CA)	757,944	ton		\$32,591,604
Tipping Fees (TSCA)	C.1)	251,896	ton		\$13,854,265
11 0 ()		ŕ			
	Direct Capital:				\$85,312,086
	Engineering, Procurement & Const	truction Managem	ent:		10,237,450
	Total Capital:				\$95,500,000
		INSTITUTIO	NAL CONT	TROLS	
Cortellie		Oue-44-	IImit-		Cost
Capital Items Deed Restrictions		Quantity 1	Units LS		\$5,000
	Direct Capital: Engineering, Procurement & Const	truction Managem	ent:		\$5,000 600
	Total Capital:				\$5,600
Present Worth	of Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring			40	\$300,000	\$4,513,889
	Tatal Danama W. d. J	OPMC :			64 543 000
	Total Present Worth, Longer Term	OXIVI COSTS			\$4,513,889
		~ .			

Total Project Capital and O&M Cost

\$4,500,000

BAYPORT CLOSURE

Capital Items Clean Soil Cap Seeding Mitigation		Quantity 2,178,000 2,178,000 450	Cy sy acre		Cost \$21,780,000 \$2,178,000 \$4,500,000		
	Present Worth of Direct Capital: Engineering, Procurement & Constru	ction Manageme	ent:		\$2,766,749 \$332,010		
	Total Capital:				\$3,098,759		
	of Longer Term Operating Costs		Years	Annual Cost			
Mitigation			40	972	\$14,628		
Long-term Monitoring			40	63,194	\$950,842		
Long-term O&M			40	6,025	\$90,659		
	Total Present Worth, Longer Term O&M Costs						
	Total Project Capital and O&M Cost						
	TOTAL COST				\$234,400,000		

Table 7-3 Cost Summary for Remedial Alternatives - Zone 2 500 ppb

Alternative	Dredge Volume (cy)	Mechanical Dredging	Water Treatment	CAD Construction	CDF Construction	Renard Island Closure	Off-site Disposal	Institutional Controls	Subtotal	20% Contingency	TOTAL
Α	0							\$4,500,000	\$4,500,000	\$900,000	\$5,400,000
В	0							\$9,900,000	\$9,900,000	\$1,980,000	\$11,880,000
D	29,748,004	\$327,500,000	\$1,200,000		\$476,000,000	\$15,500,000		\$4,500,000	\$824,700,000	\$164,940,000	\$989,640,000
G	29,748,004	\$327,500,000	\$1,200,000	\$358,700,000		\$15,500,000		\$4,500,000	\$707,400,000	\$141,480,000	\$848,880,000

1000 ppb

Alternative	Dredge Volume (cy)	Mechanical Dredging	Water Treatment	CAD Construction	CDF Construction	Renard Island Closure	Off-site Disposal	Institutional Controls	Subtotal	20% Contingency	TOTAL
Α	0							\$4,500,000	\$4,500,000	\$900,000	\$5,400,000
В	0							\$9,900,000	\$9,900,000	\$1,980,000	\$11,880,000
D	29,322,254	\$322,900,000	\$1,200,000		\$470,000,000	\$15,500,000		\$4,500,000	\$814,100,000	\$162,820,000	\$976,920,000
G	29,322,254	\$322,900,000	\$1,200,000	\$353,700,000		\$15,500,000		\$4,500,000	\$697,800,000	\$139,560,000	\$837,360,000

5000 ppb

Alternative	Dredge Volume (cy)	Mechanical Dredging	Water Treatment	CAD Construction	CDF Construction	Renard Island Closure	Off-site Disposal	Institutional Controls	Subtotal	20% Contingency	TOTAL
Α	0							\$4,500,000	\$4,500,000	\$900,000	\$5,400,000
В	0							\$9,900,000	\$9,900,000	\$1,980,000	\$11,880,000
С	4,070,170	\$48,700,000	\$700,000			\$15,500,000	\$437,800,000	\$4,500,000	\$507,200,000	\$101,440,000	\$608,640,000
D	4,070,170	\$48,700,000	\$700,000		\$97,100,000	\$15,500,000		\$4,500,000	\$166,500,000	\$33,300,000	\$199,800,000
G	4,070,170	\$48,700,000	\$700,000	\$54,600,000		\$15,500,000		\$4,500,000	\$124,000,000	\$24,800,000	\$148,800,000

BASIS FOR PRELIMINARY COST ESTIMATES SEDIMENT REMEDIATION FOX RIVER, WISCONSIN

Zone 2 Action Level - 500 ppb

W				
Material Handling Assumptions: Volume > 500 ppb	29,748,004	av.	22,708,400 m3	
Volume > 1,000 ppb	29,322,254		22,708,400 m3 22,383,400 m3	
Volume > 5,000 ppb	4,070,170	-	3,107,000 m3	
Solids Specific Gravity	2.36	,	2,201,3000	
Fresh Water Density	62.4	lb/ft3		
In Situ Density	49.5%	w/w 29.3% v/v	1.18 tons per cy	
Slurry Density (20% in situ)	12.8%		0.91 tons per cy	
Dewatered Density (settling pond)	49.5%		1.18 tons per cy	
Treated Density	93.4%		1.28 tons per cy	
CDF Capacity	29,336,664	-	22,394,400 m3	
CAD Capacity	29,336,664	cy	22,394,400 m3	
Cost Estimating Parameters & Methodology:	6.007			
Interest Rate Sales Tax	6.0% 5.5%			Not Used
Engineering, Procurement and Construction Mgmt	12.0%			Not Osed
Contractor Overhead and Profit - Dredging Only	15.0%			
Dredging				
Dredge Monitoring (Water Quality)	\$3,000	per day		
Sediment Removal QA	\$1,200	per day		
Mechanical - 12 cy bucket				
Dock Construction	\$400,000			Ogden Beeman
Mobilization - Equipment		per dredge		Ogden Beeman
Mobilization - Silt Curtain	\$35,000			Ogden Beeman
Mobilization - Watertight Barge	\$100,000			Ogden Beeman (JAG estimate)
Shift Rate (10 hours) Dredge Rate	\$30,000	cy in situ per 10 hour shift		Ogden Beeman Ogden Beeman
Offload Stockpile Area Prep.	\$75,000			Ogden Beeman
Free Water per cy Dredged (10%)	20			Ogden Beeman
Site Restoration	\$670,000			0,0000 = 0000000
Nearshore CDF	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Renard Island		
Land Lease or Purchase	\$1.80	per sf		Ole
Length	20,948			Baird
Capping Volume	3,880,174			Baird
Area	34,921,570			Baird
Ground Treatment Volume	117,777	-		
Ground Treatment Dredge Volume	3,880,174	per cy		
Fill Purchase/Placement		per cy		
Sheetpile Area	2,513,814			Baird
Sheetpile Cost		per sf		Grant
Shot Rock Berm		per lf		Baird
Rip Rap		per lf		Baird
Place Treated Material		per cy		
Clean Soil Cap		per cy		Baird
Seeding		per sy		Baird
Mitigation	\$10,000	•		Tr:
Long torm Monitoring	\$10,000			Tim
Long-term Monitoring Long-term O&M	\$650,000 2%	of capital		
CAD	2/0	or capital		
Removal Volume	29,748,004	cv		
Area	50,199,757	*		
Sand Cap Thickness	3			
Mobilization/Site Prep	\$200,000			
Placement Rate Sand Purchase		per cy		Ogden Beeman
Sand Purchase Sand Density		per ton tons per cy		Ole
Cap Placement QA	\$100,000			
Long-term O&M		of capital		
Long-term Monitoring	\$400,000	per year		
Water Treatment				
Flow Rate (7 dredges)		gpm		assume operate 24/7
Unit, Purchase	\$562,869			pj
Water Treatment (Including Operator)		per 1,000 gallons		pj
Water Treatment QA Institutional Controls	\$200	per day		pj, 1 sample per day
Public Education Program	\$100,000			рј
O&M Plans	\$20,000			рj pj
Deed Restrictions	\$5,000			pj
Annual Costs	*			**
Public Education Program	\$30,000			pj
Public Education Program Maintaining O&M Plans	\$800			pj pj
Public Education Program Maintaining O&M Plans Reporting	\$800 \$20,000			pj pj
Public Education Program Maintaining O&M Plans	\$800			pj

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Construc	ction Managemen	ıt:		\$5,000 600
	\$5,600				
Present Worth of Long-term Monitoring (f Longer Term Operating Costs no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term Od	&M Costs			\$4,513,889
	Total Project Capital and O&M Cost				
	TOTAL COST				\$4,500,000

ALTERNATIVE B: Monitored Natural Recovery

MONITORING/INSTITUTIONAL CONTROLS

Capital Items		Quantity	Units		Cost
Public Education Progra	m	1	LS		\$100,000
O&M Plans		1	LS		\$20,000
Deed Restrictions		1	LS		\$5,000
	Direct Capital:				\$125,000
	Engineering, Procurement & Constru	ction Manageme	nt:		15,000
	Total Capital:				\$140,000
Present Worth o	Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring			40	\$600,000	\$9,027,778
Public Education Progra	m		40	\$30,000	\$451,389
Maintaining O&M Plan	S		40	\$800	\$12,037
Reporting			40	\$20,000	\$300,926
	Total Present Worth, Longer Term O	&M Costs			\$9,792,130
Total Project Capital and O&M Cost					\$9,900,000
	TOTAL COST				\$9,900,000

ALTERNATIVE D: Dredge Sediment to CDF

SEDIMENT REMOVAL (MECHANICAL DREDGING)

Capital Items	Quantity	Units		Cost
Mobilization - Equipment and Silt Curtain	7	LS		\$2,450,000
Watertight Barges	4	ea		\$400,000
Dredging - 12 hour shifts	7,437	Day	57.20769231	\$223,110,000
Dredge Monitoring (Water Quality)	7,437	Day		\$22,311,000
Sediment Removal QA	7,437	Day		\$8,924,400
Site Restoration	1	ea		\$670,000
Direct Capital:				\$257,865,400
Engineering, Procurement & Co	nstruction Manageme	nt:		30,943,848
Contractor Overhead/Profit:				38,679,810
Total Capital:				\$327,500,000

WATER TREATMENT

Capital Items	Quantity	Units	Cost
Unit Purchase	281	gpm	\$562,869
Water Treatment (Includes Operator)	600,790,689	gal	\$240,316
Water Treatment QA	1,488	day	\$297,600
Direct Capital:			\$1,100,786
Engineering, Procurement	t & Construction Managemer	nt:	132,094
Total Capital:			\$1,200,000

	CDF CONSTR	UCTION (C	ellular Coffe	rdam Design)	
Capital Items		Quantity	Units		Cost
Land Lease or Purchase		34,921,570	sf		\$62,858,826
Ground Treatment		117,777	cy		\$2,944,420
Dredging		3,695	day		\$21,063,804
Fill Purchase/Placement		3,880,174	cy		\$116,405,233
Shot Rock/Rip Rap		20,948	lf		\$18,120,406
Sheetpile Placement		2,513,814	sf		\$47,762,457
Clean Soil Cap		3,880,174	cy		\$38,801,744
Seeding		3,880,174	sy		\$3,880,174
Mitigation		802	acre		\$8,016,889
	Direct Capital:				\$319,853,954
	Engineering, Procurement & Construc	ction Manageme	nt:		\$38,382,475
	Total Capital:				\$358,236,429
Present Worth o	f Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	10,000	\$150,463
Long-term Monitoring			40	650,000	\$9,780,093
Long-term O&M			40	7,164,729	\$107,802,633
	Total Present Worth, Longer Term Od	&M Costs			\$117,733,189
	Total Project Capital and O&M Co	ost			\$476,000,000
	REN	NARD ISLA!	ND CLOSUF	RE	
Capital Items		Quantity	Units		Cost
Clean Soil Cap		290,400	cy		\$2,904,000
Seeding		290,400	sy		\$290,400
Mitigation		60	acre		\$600,000
	Direct Capital:				\$3,794,400
	Engineering, Procurement & Construc	ction Manageme	nt:		\$455,328
	Total Capital:				\$4,249,728
Present Worth o	f Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	10,000	\$150,463
Long-term Monitoring			40	650,000	\$9,780,093
Long-term O&M			40	84,995	\$1,278,853
	Total Present Worth, Longer Term Od	&M Costs			\$11,209,409

INSTITUTIONAL CONTROLS

\$15,500,000

Total Project Capital and O&M Cost

Capital Items		Quantity	Units		Cost		
Deed Restrictions		1	LS		\$5,000		
	Direct Capital:				\$5,000		
	Engineering, Procurement & Construction Management:						
	\$5,600						
Present Worth	Annual Cost						
Long-term Monitoring	(no action)		40	\$300,000	\$4,513,889		
Total Present Worth, Longer Term O&M Costs					\$4,513,889		
	Total Project Capital and O&M Cos	t			\$4,500,000		
	TOTAL COST				\$824,700,000		

SEDIMENT REMOVAL (MECHANICAL DREDGING)

	SEDIMENT	KEMOVAL (F	MECHANIC	AL DREDGING)	
Capital Items Mobilization - Equipmen Watertight Barges		Quantity 7 4	Units LS ea		Cost \$2,450,000 \$400,000
Dredging - 12 hour shift		7,437	Day		\$223,110,000
Dredge Monitoring (Wa	ter Quality)	7,437	Day		\$22,311,000
Sediment Removal QA Site Restoration		7,437 1	Day		\$8,924,400
Site Restoration		1	ea		\$670,000
	Direct Capital: Engineering, Procurement & Cons Contractor Overhead/Profit:	truction Manageme	nt:		\$257,865,400 30,943,848 38,679,810
	Total Capital:				\$327,500,000
		WATER TRI	EATMENT		
Capital Items Unit Purchase		Quantity 281	Units gpm		Cost \$562,869
Water Treatment (Includ	les Operator)	600,790,689	gal		\$240,316
Water Treatment QA	ico operator)	1,488	day		\$297,600
	Direct Capital:				\$1,100,786
	Engineering, Procurement & Cons	truction Manageme	nt:		132,094
	Total Capital:				\$1,200,000
		CAD CON	STRUCTIO	N	
Capital Items		Quantity	Units		Cost
Mobilization - Equipmen	nt and Silt Curtain	1	LS		\$170,000
Dredging - 12 hour shift		28,332	Day		\$161,492,400
Sand Purchase		7,808,851	tons		\$46,853,106
Placement		5,577,751	cy		\$33,466,505
Cap Placement QA		1	LS		\$100,000
	Direct Capital: Engineering, Procurement & Cons	truction Manageme	nt:		\$242,082,011 29,049,841
	Total Capital:				\$271,131,852
	Longer Term Operating Costs		Years	Annual Cost	
Monitoring/O&M Long-term Monitoring			40	\$400,000	\$6,018,519
Long-term O&M			40	\$5,422,637	\$81,590,607
-	Total Present Worth, Longer Term	O&M Costs			\$87,609,126
	Total Project Capital and O&M	Cost			\$358,700,000
	R	ENARD ISLAN	ND CLOSUF	RE	
Capital Items		Quantity	Units		Cost
Clean Soil Cap		290,400	cy		\$2,904,000
Seeding		290,400	sy		\$290,400
Mitigation		60	acre		\$600,000
	Direct Capital: Engineering, Procurement & Cons	truction Manageme	nt:		\$3,794,400 \$455,328
	Total Capital:				\$4,249,728
Present Wouth -4	Longer Term Operating Costs		Years	Annual Cost	
Mitigation	Longer Term Operating Costs		40	10,000	\$150,463
Long-term Monitoring			40	650,000	\$9,780,093
Long-term O&M			40	84,995	\$1,278,853
-	Total Present Worth, Longer Term	O&M Costs		,	\$11,209,409
	Total Project Capital and O&M	Cust			\$15,500,000

Costs-R4.xls

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Construc	ction Managemen	t:		\$5,000 600
	Total Capital:				\$5,600
Present Worth of Long-term Monitoring (f Longer Term Operating Costs no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term O&	&M Costs			\$4,513,889
	Total Project Capital and O&M Co	st			\$4,500,000
	TOTAL COST				\$707,400,000

BASIS FOR PRELIMINARY COST ESTIMATES SEDIMENT REMEDIATION FOX RIVER, WISCONSIN

Zone 2

Action Level - 1,000 ppb

Material Handling Assumptions:				
Volume > 1,000 ppb	29,322,254	cy	22,383,400 m3	
Volume > 500 ppb	29,748,004	cy	22,708,400 m3	
Volume > 5,000 ppb	4,070,170	cy	3,107,000 m3	
Solids Specific Gravity	2.36			
Fresh Water Density		lb/ft3		
In Situ Density	49.5%		1.18 tons per cy	
Slurry Density (20% in situ)	12.8%		0.91 tons per cy	
Dewatered Density (settling pond)	49.5%		1.18 tons per cy	
Treated Density	93.4%		1.28 tons per cy	
CDF Capacity CAD Capacity	26,394,060 29,336,664	-	22,394,400 m3 22,394,400 m3	
CAD Capacity	27,330,004	cy	22,374,400 1113	
Cost Estimating Parameters & Methodology:				
Interest Rate	6.0%			
Sales Tax	5.5%			Not Used
Engineering, Procurement and Construction Mgmt	12.0%			
Contractor Overhead and Profit - Dredging Only Dredging	15.0%)		
Dredge Monitoring (Water Quality)	\$3,000	per day		
Sediment Removal QA		per day		
Mechanical - 12 cy bucket	\$1,200	per any		
Dock Construction	\$400,000	LS		Ogden Beeman
Mobilization - Equipment	\$315,000	per dredge		Ogden Beeman
Mobilization - Silt Curtain	\$35,000			Ogden Beeman
Mobilization - Watertight Barge	\$100,000	ea		Ogden Beeman (JAG estimate)
Shift Rate (10 hours)	\$30,000	per shift		Ogden Beeman
Dredge Rate		cy in situ per 10 hour shift		Ogden Beeman
Offload Stockpile Area Prep.		per area		
Free Water per cy Dredged (10%)		gal		Ogden Beeman
Site Restoration	\$670,000			
Nearshore CDF	01.00	Renard Island	<u>1</u>	
Land Lease or Purchase Length	20,798	per sf		Ole Baird
Capping Volume	3,824,642			Baird
Area	34,421,776			Baird
Ground Treatment Volume	116,931			Dunu
Ground Treatment		per cy		
Dredge Volume	3,824,642			
Fill Purchase/Placement		per cy		
Sheetpile Area	2,495,760	sf		Baird
Sheetpile Cost		per sf		Grant
Shot Rock Berm		per lf		Baird
Rip Rap		per lf		Baird
Place Treated Material		per cy		B : 1
Clean Soil Cap Seeding		per cy		Baird Baird
Mitigation		per sy per acre		Ballu
Wittigation		per year		Tim
Long-term Monitoring	\$650,000	1 5		11111
Long-term O&M		of capital		
CAD		•		
Removal Volume	29,322,254	cy		
Area	49,481,304			
Sand Cap Thickness		ft		
Mobilization/Site Prep Placement Rate	\$200,000			Ogden Beeman
Sand Purchase		per cy per ton		Ole
Sand Density		tons per cy		Oic .
Cap Placement QA	\$100,000			
Long-term O&M		of capital		
Long-term Monitoring	\$400,000	per year		
Water Treatment				
Flow Rate (7 dredges)		gpm		assume operate 24/7
Unit, Purchase	\$562,869			pj _.
Water Treatment (Including Operator) Water Treatment QA		per 1,000 gallons		pj ni 1 sample per day
Institutional Controls	\$200	per day		pj, 1 sample per day
Public Education Program	\$100,000			pj
O&M Plans	\$20,000			pj
Deed Restrictions	\$5,000			pj
Annual Costs	,			10
Public Education Program	\$30,000			pj
Maintaining O&M Plans	\$800			pj
Reporting	\$20,000			pj
Long-term Monitoring	\$600,000			Anne LTM
Long-term Monitoring (no action)	\$300,000			Anne LTM

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Constru	uction Managemen	ıt:		\$5,000 600
	Total Capital:				\$5,600
Present Worth of Long-term Monitoring	of Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term C	0&M Costs			\$4,513,889
	Total Project Capital and O&M C	ost			\$4,500,000
	TOTAL COST				\$4,500,000

ALTERNATIVE B: Monitored Natural Recovery

MONITORING/INSTITUTIONAL CONTROLS

Capital Items		Quantity	Units		Cost
Public Education Progra	m	1	LS		\$100,000
O&M Plans		1	LS		\$20,000
Deed Restrictions		1	LS		\$5,000
	Direct Capital:				\$125,000
	*	ation Managama			15,000
	Engineering, Procurement & Construction	ction Managemen	III.		13,000
	Total Capital:				\$140,000
	•				
Present Worth of	f Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring			40	\$600,000	\$9,027,778
Public Education Progra	m		40	\$30,000	\$451,389
Maintaining O&M Plans	S		40	\$800	\$12,037
Reporting			40	\$20,000	\$300,926
	Total Present Worth, Longer Term Oc	&M Costs			\$9,792,130
	Total Project Capital and O&M Co	ost			\$9,900,000
	TOTAL COST				\$9,900,000

ALTERNATIVE D: Dredge Sediment to CDF

SEDIMENT REMOVAL (MECHANICAL DREDGING)

Capital Items	Quantity	Units		Cost
Mobilization - Equipment and Silt Curtain	7	LS		\$2,450,000
Watertight Barges	4	ea		\$400,000
Dredging - 12 hour shifts	7,331	Day	56.39230769	\$219,930,000
Dredge Monitoring (Water Quality)	7,331	Day		\$21,993,000
Sediment Removal QA	7,331	Day		\$8,797,200
Site Restoration	1	ea		\$670,000
Direct Capital:				\$254,240,200
Engineering, Procurement & Co	onstruction Manageme	nt:		30,508,824
Contractor Overhead/Profit:				38,136,030
Total Capital:				\$322,900,000

WATER TREATMENT

Capital Items	Quantity	Units	Cost
Unit Purchase	281	gpm	\$562,869
Water Treatment (Includes Operator)	592,192,242	gal	\$236,877
Water Treatment QA	1,467	day	\$293,400
Direct Capital:			\$1,093,146
Engineering, Procuremen	t & Construction Managemer	it:	131,178
Total Capital:			\$1,200,000

CDF CONSTRUCTION (Cellular Cofferdam Design)

	CDF CONSTRUCTI	ON (Cel	lular Cott	erdam Design)	
Capital Items	Oua	intity	Units		Cost
Land Lease or Purchase	34,42	1,776	sf		\$61,959,198
Ground Treatment	116,	,931	cy		\$2,923,274
Dredging	3,6	43	day		\$20,762,341
Fill Purchase/Placement			cy		\$114,739,255
Shot Rock/Rip Rap	20,7		lf		\$17,990,270
Sheetpile Placement	2,495		sf		\$47,419,440
Clean Soil Cap	3,824		cy		\$38,246,418
Seeding	3,824	*	sy		\$3,824,642
Mitigation	79	90	acre		\$7,902,153
	Direct Capital: Engineering, Procurement & Construction M.	anagement			\$315,766,990 \$37,892,039
	Total Capital:				\$353,659,029
Present Worth of	Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	10,000	\$150,463
Long-term Monitoring			40	650,000	\$9,780,093
Long-term O&M			40	7,073,181	\$106,425,175
	Total Present Worth, Longer Term O&M Cos	sts			\$116,355,731
	Total Project Capital and O&M Cost				\$470,000,000
	RENARD	ISLAN	D CLOSU	RE	
Capital Items		intity	Units		Cost
Clean Soil Cap	290,		cy		\$2,904,000
Seeding	290,		sy		\$290,400
Mitigation	6	0	acre		\$600,000
	Direct Capital:				\$3,794,400
	Engineering, Procurement & Construction M.	anagement	:		\$455,328
	Total Capital:				\$4,249,728
	Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	10,000	\$150,463
Long-term Monitoring			40	650,000	\$9,780,093
Long-term O&M			40	84,995	\$1,278,853
	Total Present Worth, Longer Term O&M Cos	sts			\$11,209,409
	Total Project Capital and O&M Cost				\$15,500,000
	INSTITUT	ΓΙΟΝΑL	CONTRO	OLS	
Capital Items	Qua	intity	Units		Cost
Deed Restrictions		1	LS		\$5,000
	Direct Capital:				\$5,000
	Engineering, Procurement & Construction M	anagement	:		600
	Total Capital:	-			\$5,600
Present Worth of	Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring (no action)		40	\$300,000	\$4,513,889
	Total Present Worth, Longer Term O&M Cos	sts			\$4,513,889

Total Project Capital and O&M Cost

TOTAL COST

\$4,500,000

\$814,100,000

SEDIMENT REMOVAL (MECHANICAL DREDGING)

	SEDIMENT	KENIOVAL (F	MECHANIC	AL DREDGING)	
Capital Items	art and Gilt Cont.	Quantity	Units		Cost
Mobilization - Equipme	nt and Silt Curtain	7	LS		\$2,450,000
Watertight Barges		4	ea		\$400,000
Dredging - 12 hour shift Dredge Monitoring (Wa		7,331	Day		\$219,930,000
Sediment Removal QA	ter Quanty)	7,331 7,331	Day		\$21,993,000
Site Restoration		7,331 1	Day		\$8,797,200 \$670,000
Site Restoration		1	ea		\$670,000
	Direct Capital:				\$254,240,200
	Engineering, Procurement & Const	ruction Manageme	nt.		30,508,824
	Contractor Overhead/Profit:	auction manageme			38,136,030
	Total Capital:				\$322,900,000
		WATER TRI	EATMENT		
Capital Items		Quantity	Units		Cost
Unit Purchase		281	gpm		\$562,869
Water Treatment (Include	les Operator)	592,192,242	gal		\$236,877
Water Treatment QA		1,467	day		\$293,400
	Direct Capital:				\$1,093,146
	Engineering, Procurement & Const	ruction Manageme	nt:		131,178
		_			
	Total Capital:				\$1,200,000
					V-,,···
		CAD CON	STRUCTIO	N	
Capital Items		Quantity	Units		Cost
Mobilization - Equipme		1	LS		\$170,000
Dredging - 12 hour shift	S	27,926	Day		\$159,178,200
Sand Purchase		7,697,092	tons		\$46,182,550
Placement		5,497,923	cy		\$32,987,536
Cap Placement QA		1	LS		\$100,000
	Direct Capital:				\$238,618,286
	Engineering, Procurement & Const	ruction Manageme	nt.		28,634,194
	Engineering, Froedreiheit & Const	ruction manageme			20,031,194
	Total Capital:				\$267,252,480
Present Worth o	f Longer Term Operating Costs		Years	Annual Cost	
Monitoring/O&M					
Long-term Monitoring			40	\$400,000	\$6,018,519
Long-term O&M			40	\$5,345,050	\$80,423,203
					005.444.55
	Total Present Worth, Longer Term	O&M Costs			\$86,441,722
	Total Project Capital and O.P.M.	Cost			\$353 700 000
	Total Project Capital and O&M	Cost			\$353,700,000
	R	ENARD ISLAN	ND CLOSUF	RE	
Capital Items		Quantity	Units		Cost
Clean Soil Cap		290,400	cy		\$2,904,000
Seeding		290,400	sy		\$290,400
Mitigation		60	acre		\$600,000
	Direct Capital:				\$3,794,400
	Engineering, Procurement & Const	ruction Manageme	nt:		\$455,328
	Total Capital:				\$4,249,728
	Total Capital.				94,247,720
Present Worth o	f Longer Term Operating Costs		Years	Annual Cost	
Mitigation	3 Fr 8		40	10,000	\$150,463
Long-term Monitoring			40	650,000	\$9,780,093
Long-term O&M			40	84,995	\$1,278,853
	Total Present Worth, Longer Term	O&M Costs			\$11,209,409
	Total Duciont Conital and COM	Cost			¢1 = 500 000
	Total Project Capital and O&M	Cust			\$15,500,000

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Construc	tion Managemen	ıt:		\$5,000 600
	Total Capital:				\$5,600
Present Worth of Long-term Monitoring	of Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term O&	M Costs			\$4,513,889
	Total Project Capital and O&M Cos	st			\$4,500,000
	TOTAL COST				\$697,800,000

BASIS FOR PRELIMINARY COST ESTIMATES SEDIMENT REMEDIATION FOX RIVER, WISCONSIN

Zone 2 Action Level - 5,000 ppb

March Bardling Assumptions								
Volume - 10th priph 29,721,214 cy 22,308,4800 ml Volume - 10th priph 29,748,744 cy 22,308,4800 ml Volume - 10th priph 29,748,744 cy 22,308,4800 ml Volume - 10th priph 29,748,744 cy 22,308,4800 ml Volume - 10th priph		4 070 170	av.		2 107 000	2		
Volume > 1,000 pb 29,248,001 cy 22,708,400 ms 236 162			-					
Solido Specific Gravity 2.56	11							
Feed Water Density	* **		Cy		22,708,400	III		
In Sime Denniny 128			lb/ft3					
Surp Specing (20%-in nism)	•			v/v	1 18	tons per cv		
Deviated Dennity (setting pondy)	·							
12								
Cont Estimating Parameter & Methodology:								
Cost Stimutica Parameters & Methodology:	•							
Interest Race 6.0% 5.5%								
Interest Rate Sole's Sole's Sole's Sole's Engineering, Procurement and Construction Mgmt 12.0% 13.0% Engineering, Procurement and Construction Mgmt 12.0% 13.0% Sole	e. ID cupacity	25,550,001	٠,		22,371,100			
Interest Rate Sole's Sole's Sole's Sole's Engineering, Procurement and Construction Mgmt 12.0% 13.0% Engineering, Procurement and Construction Mgmt 12.0% 13.0% Sole								
Sale Tax Sale Tax Sale								
Engineerine, Procurement and Construction Member 12.0% Contractor Octobedia and Profit Prodeign Goldy 15.0% Dredge Munitering (Water Quality) S.3.000 per day Software Second State Second Sta								
Dredge Monitoring (Water Quality)							Not Used	
Dredge Monitoring (Water Quality) S.3,000 per day Schemen Removal QA S.1,000 per day S.1,000 per dredge Qaden Becman Qaden								
Drodge Monitoring (Water Quality) \$3.000 per day		15.0%	•					
Sediment Removal QA \$1,000 per day		62.000						
Mechanical - 12 cy bucket								
Dock Construction Si00,000 S Ogden Reeman Si15,000 Construction Si15,000 Constru		\$1,200	per day					
Mobilization - Equipment S315,000 or dredege Ogden Beeman		0.400.000	T 0				0.1.70	
Mobilization - Silt Cutrain Si5,0000 Si								
Mobilization - Walertight Barge \$100,000 schill for boars \$30,000 per shift \$0.000 per shift \$0.0								
Shift Rate (10 hours)								
Decay Seed of the content of t								(JAG estimate)
Offlood Stockpile Acae Prep. \$75,000 per area Prep Water per y Dredged (10%) \$20 gal \$ \$ \$ \$ \$ \$ \$ \$ \$, ,							
Free Water per cy Dredged (10%) 20 gal SiRe Research (10%) 5570,000 1.5	•			nour shift			Ogden Beeman	
Second S								
NearBore CDF							Ogden Beeman	
Langth Capping Volume S180 per sf Capping Volume S30,892 cy 200,400 Baird		\$670,000	LS					
Length				Renard Island				
Capping Volume								
Area								
Ground Treatment Volume								
Ground Treatment \$325 per cy				2,613,600			Baird	
Dredge Volume								
Fill Purchase/Placement								
Sheetpile Area 929,845 Sir Grant Sheetpile Cost S19 per sf Grant Sheetpile Cost S19 per sf Shot Rock Berm S650 per lf Shaird Sheetpile Cost Shot Rock Berm S215 per lf Shaird Sheetpile Cost Sir Sper cy Shaird Saird Seeding S10 per cy Shaird Sheetpile Cost Sir Sheetpile Cost Sir Sheetpile Cost Sheetpile Cost Sir Sheetpile Cost Sheetpile C	•		-					
Sheepile Cost								
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Clean Soil Cap Si per sy	• •	\$215	per lf				Baird	
Seeding \$1 per sy Baird Mitigation \$10,000 per acre Tim \$10,000 per year Tim Long-term Monitoring \$650,000 per year Long-term O&M 2% of capital Tim Solidification Tim Tim Per cent Lime 10.0% (w/w) Tim Lime \$60 per ton Mixing \$25 per ton Ole CAD Removal Volume 4,070,170 cy Very Cap Placement Rate \$6,868,412 sf Sf Sf Sf Sf Sf Per contact Size Preport Ogden Beeman Ole Sf Sf Sf Per contact Size Preport Ole Ole Sf Sf Per ton Ole Ole Sf Per ton Ole Ole Sf Sf Per ton<								
Mitigation								
Sin							Baird	
Long-term Monitoring	Mitigation		•					
Long-term O&M 2% of capital Tim							Tim	
Solidification								
Percent Lime		2%	of capital					
CAD Removal Volume 4,070,170 cy cy Area 6,868,412 sf sf Sand Cap Thickness 3 ft cy Mobilization/Site Prep \$200,000 cy cy cy Placement Rate \$6 per cy Ogden Beeman Ole Sand Purchase \$6 per ton Ole Ogden Beeman Sand Density 1.4 tons per cy Ole Ole Cap Placement QA \$100,000 LS LS Cap Placement QA \$100,000 LS LS Cap Placement QA \$100,000 LS LS Sand Persitant							Tim	
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Removal Volume 4,070,170 cy Area 6,868,412 sf Sand Cap Thickness 3 ft Mobilization/Site Prep \$200,000 S200,000 Placement Rate \$6 per cy Ogden Beeman Sand Purchase \$6 per ton Ole Sand Density 1.4 tons per cy Cap Placement QA \$100,000 LS Long-term O&M 2% of capital Long-term Monitoring \$400,000 per year Water Treatment Flow Rate (7 dredges) 281 gpm Unit, Purchase \$562,869 LS pj Water Treatment (Including Operator) \$0.40 per 1,000 gallons pj	Lime	\$60	per ton	Mixing	\$25	per ton	Ole	
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Long-term Monitoring \$400,000 per year Water Treatment Flow Rate (7 dredges) 281 gpm assume operate 24/7 Unit, Purchase \$562,869 LS pj Water Treatment (Including Operator) \$0.40 per 1,000 gallons pj								
Water Treatment 281 gpm assume operate 24/7 Flow Rate (7 dredges) 281 gpm assume operate 24/7 Unit, Purchase \$562,869 LS pj Water Treatment (Including Operator) \$0.40 per 1,000 gallons pj								
Flow Rate (7 dredges) 281 gpm assume operate 24/7 Unit, Purchase \$562,869 LS pj Water Treatment (Including Operator) \$0.40 per $1,000$ gallons pj		φ 1 00,000	por your					
Unit, Purchase \$562,869 LS pj Water Treatment (Including Operator) \$0.40 per 1,000 gallons pj		201	gnm				gesuma anarata	24/7
Water Treatment (Including Operator) \$0.40 per 1,000 gallons pj							1	L+/ /
water freatment Qrs 5200 per day p.j, 1 sample per day								day
	were treatment As	\$200	per day				pj, i sampie pei	auy

Off-Site Disposal \$2.80 per ton pj Round-trip Hauling 2 hours pj Tipping Fee (non-TSCA) \$43 per ton St. Paul Tipping Fee (TSCA) \$55 per ton St. Paul Truck Rate \$75 per hour pj Truck Load \$32 tons pj Institutional Controls Public Education Program \$100,000 pj O&M Plans \$20,000 pj Deed Restrictions \$5,000 pj
Round-trip Hauling 2 hours pj Tipping Fee (non-TSCA) \$43 per ton St. Paul Tipping Fee (TSCA) \$55 per ton St. Paul Truck Rate \$75 per hour pj Truck Load 32 tons pj Institutional Controls Public Education Program \$100,000 pj O&M Plans \$20,000 pj Deed Restrictions \$5,000 pj
Tipping Fee (non-TSCA) \$43 per ton St. Paul Tipping Fee (TSCA) \$55 per ton St. Paul Truck Rate \$75 per hour pj Truck Load 32 tons pj Institutional Controls Public Education Program \$100,000 pj O&M Plans \$20,000 pj Deed Restrictions \$5,000 pj
Tipping Fee (TSCA) \$55 per ton St. Paul Truck Rate \$75 per hour pj Truck Load 32 tons pj Institutional Controls pj Public Education Program \$100,000 pj O&M Plans \$20,000 pj Deed Restrictions \$5,000 pj
Truck Rate \$75 per hour pj Truck Load 32 tons pj Institutional Controls Public Education Program \$100,000 pj O&M Plans \$20,000 pj Deed Restrictions \$5,000 pj
Truck Load 32 tons pj Institutional Controls Public Education Program \$100,000 pj O&M Plans \$20,000 pj Deed Restrictions \$5,000 pj
Institutional Controls Public Education Program \$100,000 pj O&M Plans \$20,000 pj Deed Restrictions \$5,000 pj
Public Education Program \$100,000 pj O&M Plans \$20,000 pj Deed Restrictions \$5,000 pj
O&M Plans \$20,000 pj Deed Restrictions \$5,000 pj
Deed Restrictions \$5,000 pj
AI Ct-
Annual Costs
Public Education Program \$30,000 pj
Maintaining O&M Plans \$800 pj
Reporting \$20,000 pj
Long-term Monitoring \$600,000 Anne LTM
Long-term Monitoring (no action) \$300,000 Anne LTM

ALTERNATIVE A: No Action

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Construc	ction Managemer	nt:		\$5,000 600
	Total Capital:				\$5,600
Present Worth of Long-term Monitoring	of Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term Oc	&M Costs			\$4,513,889
	Total Project Capital and O&M Co	ost			\$4,500,000
	TOTAL COST				\$4,500,000

ALTERNATIVE B: Monitored Natural Recovery

MONITORING/INSTITUTIONAL CONTROLS

Capital Items Public Education Program O&M Plans Deed Restrictions	Quantity 1 1 1	Units LS LS LS		Cost \$100,000 \$20,000 \$5,000
Direct Capita Engineering,	l: Procurement & Construction Manageme	nt:		\$125,000 15,000
Total Capita	l:			\$140,000
Present Worth of Longer Term	Operating Costs	Years	Annual Cost	
Long-term Monitoring		40	\$600,000	\$9,027,778
Public Education Program		40	\$30,000	\$451,389
Maintaining O&M Plans		40	\$800	\$12,037
Reporting		40	\$20,000	\$300,926
Total Present	Worth, Longer Term O&M Costs			\$9,792,130
Total Projec	t Capital and O&M Cost			\$9,900,000
TOTAL COS	ST			\$9,900,000

SEDIMENT REMOVAL (MECHANICAL DREDGING)

Capital Items		Quantity	Units		Cost
Mobilization - Equipmen	nt and Silt Curtain	7	LS		\$2,450,000
Watertight Barges		4	ea		\$400,000
Dredging - 12 hour shift	s	1,018	Day		\$30,540,00
Dredge Monitoring (Wa	ter Quality)	1,018	Day		\$3,054,000
Sediment Removal QA Site Restoration		1,018 1	Day ea		\$1,221,600 \$670,000
	Direct Capital:				\$38,335,600
	Engineering, Procurement & Cons Contractor Overhead/Profit:	truction Manageme	nt:		4,600,272 5,750,340
	Total Capital:				\$48,700,000
		WATER TRI	EATMENT		
Capital Items		Quantity	Units		Cost
Unit Purchase		281	gpm		\$562,869
Water Treatment (Includ	les Operator)	82,201,153	gal		\$32,880
Water Treatment QA		204	day		\$40,800
	Direct Capital:		-4-		\$636,550
	Engineering, Procurement & Cons	truction Manageme	nt:		76,386
	Total Capital:				\$700,000
	CDF CONST	TRUCTION (C	ellular Coffei	rdam Design)	
Capital Items Land Lease or Purchase		Quantity 4,778,026	Units sf		Cost \$8,600,446
Ground Treatment		43,565	cy		\$1,089,124
Dredging		506	day		\$2,881,984
Fill Purchase/Placement		530,892	cy		\$15,926,752
Shot Rock/Rip Rap		7,749	lf		\$6,702,630
Sheetpile Placement		929,845	sf		\$17,667,049
Clean Soil Cap		530,892	cy		\$5,308,917
Seeding Mitigation		530,892 110	sy acre		\$530,892 \$1,096,884
	Direct Capital: Engineering, Procurement & Cons	truction Manageme	nt:		\$59,804,678 \$7,176,561
	Total Capital:				\$66,981,240
Present Worth of	Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	10,000	\$150,463
Long-term Monitoring Long-term O&M			40 40	650,000 1,339,625	\$9,780,093 \$20,156,392
	Total Present Worth, Longer Term	O&M Costs		-,,	\$30,086,948
	Total Project Capital and O&M				\$97,100,000
	R	ENARD ISLA	ND CLOSUR	RE	
Capital Items		Quantity	Units		Cost
Clean Soil Cap		290,400	cy		\$2,904,000
Seeding Mitigation		290,400 60	sy acre		\$290,400 \$600,000
C	Direct Capital: Engineering, Procurement & Cons	truction Manageme	nt:		\$3,794,400 \$455,328
	Total Capital:				\$4,249,728
Present Worth of	Longer Term Operating Costs		Years	Annual Cost	
Mitigation	- • • •		40	10,000	\$150,463
Long-term Monitoring			40	650,000	\$9,780,093
Long-term O&M			40	84,995	\$1,278,853
	Total Present Worth, Longer Term	O&M Costs			\$11,209,409
	Total Project Capital and O&M	Cost			\$15,500,000

INSTITUTIONAL CONTROLS

Capital Items		Quantity	Units		Cost
Deed Restrictions		1	LS		\$5,000
	Direct Capital:				\$5,000
	Engineering, Procurement & Constructi	ion Management			600
	Total Capital:	ion ivianagement	-		\$5,600
	Total Capital:				35,000
Present Worth of Longer Term Operating Costs Years Annual Cost					
Long-term Monitoring (no	action)		40	\$300,000	\$4,513,889
	Total Present Worth, Longer Term O&	M Costs			\$4,513,889
	Total Project Capital and O&M Cost	t			\$4,500,000
	TOTAL COST				\$166,500,000

ALTERNATIVE G: Dredge Sediment to CAD

Total Capital:

SEDIMENT REMOVAL (MECHANICAL DREDGING)

Capital Items	Quantity	Units	Cost
Mobilization - Equipment and Silt Curtain	7	LS	\$2,450,000
Watertight Barges	4	ea	\$400,000
Dredging - 12 hour shifts	1,018	Day	\$30,540,000
Dredge Monitoring (Water Quality)	1,018	Day	\$3,054,000
Sediment Removal QA	1,018	Day	\$1,221,600
Site Restoration	1	ea	\$670,000
Direct Capital:			\$38,335,600
Engineering, Procurement & Co	nstruction Manageme	nt:	4,600,272
Contractor Overhead/Profit:			5,750,340
Total Capital:			\$48,700,000

WATER TREATMENT

Capital Items	Quantity	Units	Cost
Unit Purchase	281	gpm	\$562,869
Water Treatment (Includes Operator)	82,201,153	gal	\$32,880
Water Treatment QA	204	day	\$40,800
Direct Capital:			\$636,550
Engineering, Procurement & Construction Management:			76,386

\$700,000

CAD CONSTRUCTION

Capital Items Mobilization - Equipment and Silt Curtain Dredging - 12 hour shifts Sand Purchase Placement Cap Placement QA	Quantity 1 3,877 1,068,420 763,157 1	Units LS Day tons cy LS		Cost \$170,000 \$22,098,900 \$6,410,518 \$4,578,941 \$100,000
Direct Capital: Engineering, Procurement & Co	nstruction Manageme	nt:		\$33,358,359 4,003,003
Total Capital:				\$37,361,362
Present Worth of Longer Term Operating Costs Monitoring/O&M		Years	Annual Cost	
Long-term Monitoring		40	\$400,000	\$6,018,519
Long-term O&M		40	\$747,227	\$11,243,003
Total Present Worth, Longer Ter	rm O&M Costs			\$17,261,522
Total Project Capital and O&	M Cost			\$54,600,000

RENARD ISLAND CLOSURE

Cost

Quantity

Capitai ittiiis		Quantity	Cints		Cost
Clean Soil Cap		290,400	cy		\$2,904,000
Seeding		290,400	sy		\$290,400
Mitigation		60	acre		\$600,000
	Direct Capital:				\$3,794,400
	Engineering, Procurement & Constr	ruction Manageme	nt:		\$455,328
	Total Capital:				\$4,249,728
Present Worth	n of Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	10,000	\$150,463
Long-term Monitorin	ıg		40	650,000	\$9,780,093
Long-term O&M			40	84,995	\$1,278,853
	Total Present Worth, Longer Term	O&M Costs			\$11,209,409
	Total Project Capital and O&M (Cost			\$15,500,000

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Constru-	ction Managemen	t:		\$5,000 600
	Total Capital:				\$5,600
Present Worth of Long-term Monitoring	of Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term O	&M Costs			\$4,513,889
	Total Project Capital and O&M Co	ost			\$4,500,000
	TOTAL COST				\$124,000,000

ALTERNATIVE C: Dredge and Off-site Disposal

Capital Items

SEDIMENT REMOVAL (MECHANICAL DREDGING)

Capital Items	Quantity	Units	Cost
Mobilization - Equipment and Silt Curtain	7	LS	\$2,450,000
Watertight Barges	4	ea	\$400,000
Dredging - 12 hour shifts	1,018	Day	\$30,540,000
Dredge Monitoring (Water Quality)	1,018	Day	\$3,054,000
Sediment Removal QA	1,018	Day	\$1,221,600
Site Restoration	1	ea	\$670,000
Direct Capital:			\$38,335,600
Engineering, Procurement & Co	onstruction Manageme	nt:	4,600,272
Contractor Overhead/Profit:	_		5,750,340
Total Capital:			\$48,700,000

WATER TREATMENT

Capital Items	Quantity	Units	Cost
Unit Purchase	281	gpm	\$562,869
Water Treatment (Includes Operator)	82,201,153	gal	\$32,880
Water Treatment QA	204	day	\$40,800
Direct Capital:			\$636,550
Engineering, Procurement	t & Construction Management	nt:	76,386
Total Capital:			\$700,000

SEDIMENT DISPOSAL (OFF-SITE)

	SEDIMI	21(1 D151 O	SAL (OIT-S	iiie)	
Capital Items		Quantity	Units		Cost
Solidification		4,797,107	ton		\$119,927,675
Lime Purchase		479,711	ton		\$28,782,660
Soil Loading		4,797,107	ton		\$13,431,900
Soil Hauling		4,797,107	ton		\$22,486,439
Tipping Fees (non-TSC	A)	4,797,107	ton		\$206,275,594
	Direct Capital:				\$390,904,268
	Engineering, Procurement & Construct	ion Manageme	nt:		46,908,512
	Total Capital:				\$437,800,000
	REN.	ARD ISLAN	ND CLOSUR	RE	
Capital Items		Quantity	Units		Cost
Clean Soil Cap		290,400	cy		\$2,904,000
Seeding		290,400	sy		\$290,400
Mitigation		60	acre		\$600,000
	Direct Capital: Engineering, Procurement & Construct	ion Manageme	nt:		\$3,794,400 \$455,328
	Total Capital:				\$4,249,728
Present Worth o	f Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	10,000	\$150,463
Long-term Monitoring			40	650,000	\$9,780,093
Long-term O&M			40	84,995	\$1,278,853
	Total Present Worth, Longer Term O&	M Costs			\$11,209,409
	Total Project Capital and O&M Cos	t			\$15,500,000
	INST	ITUTIONA	L CONTRO	LS	
Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital:				\$5,000
	Engineering, Procurement & Construct	ion Manageme	nt:		600
	Total Capital:				\$5,600
	f Longer Term Operating Costs		Years	Annual Cost	0.4.510.000
Long-term Monitoring ((no action)		40	\$300,000	\$4,513,889
	Total Present Worth, Longer Term O&	M Costs			\$4,513,889
	Total Project Capital and O&M Cos	t			\$4,500,000

TOTAL COST

\$507,200,000

Table 7-3 Cost Summary for Remedial Alternatives - Zone 3A 500 ppb

Alternative	Dredge Volume (cy)	Hydraulic Dredging	Mechanical Dredging	Dewatering	Water Treatment	CAD Construction	CDF Construction	Off-site Disposal	Institutional Controls	Subtotal	20% Contingency	TOTAL
Α	0								\$4,500,000	\$4,500,000	\$900,000	\$5,400,000
В	0								\$9,900,000	\$9,900,000	\$1,980,000	\$11,880,000
D	16,328,102		\$181,800,000		\$3,000,000		\$285,000,000		\$4,500,000	\$474,300,000	\$94,860,000	\$569,160,000
G	16,328,102		\$181,800,000		\$3,000,000	\$199,800,000			\$4,500,000	\$389,100,000	\$77,820,000	\$466,920,000

1000 ppb

Alternative	Dredge Volume (cy)	Hydraulic Dredging	Mechanical Dredging	Dewatering	Water Treatment	CAD Construction	CDF Construction	Off-site Disposal	Institutional Controls	Subtotal	20% Contingency	TOTAL
Α	0								\$4,500,000	\$4,500,000	\$900,000	\$5,400,000
В	0								\$9,900,000	\$9,900,000	\$1,980,000	\$11,880,000
С	14,410		\$4,600,000		\$600,000			\$1,300,000	\$4,500,000	\$11,000,000	\$2,200,000	\$13,200,000

BASIS FOR PRELIMINARY COST ESTIMATES SEDIMENT REMEDIATION

FOX RIVER, WISCONSIN

Zone 3A

Action Level - 500 ppb

Material Handling Assumptions:				
Volume > 500 ppb	16,328,102	CV	12,464,200 m3	
Volume > 1,000 ppb	14,410		11,000 m3	
Volume > 5,000 ppb		cy	0 m3	
Solids Specific Gravity	2.36	2,	V IIIS	
Fresh Water Density		lb/ft3		
In Situ Density	28.5%	w/w 14.4% v/v	1.01 tons per cy	
Slurry Density (20% in situ)	6.5%	w/w 2.9% v/v	0.88 tons per cy	
Dewatered Density	50.0%	w/w 29.8% v/v	1.18 tons per cy	
Treated Density	93.4%	w/w 60.0% v/v	1.28 tons per cy	
CDF Capacity	26,500,893	-	22,394,400 m3	
CAD Capacity	29,336,664	cy	22,394,400 m3	
Cost Estimating Parameters & Methodology:				
Interest Rate	6.0%			
Sales Tax	5.5%			Not Used
Engineering, Procurement and Construction Mgmt	12.0%			
Contractor Overhead and Profit - Dredging Only	15.0%			
<u>Dredging</u>	62.000	1		
Dredge Monitoring (Water Quality) Sediment Removal QA		per day		
Mechanical - 12 cy bucket	\$1,200	per day		
Dock Construction	\$400,000	18		Ogden Beeman
Mobilization - Equipment		per dredge		Ogden Beeman
Mobilization - Silt Curtain	\$35,000			Ogden Beeman
Mobilization - Watertight Barge	\$100,000			Ogden Beeman (JAG estimate)
Shift Rate (10 hours)		per shift		Ogden Beeman
Dredge Rate		cy in situ per 10 hour shift		Ogden Beeman
Offload Stockpile Area Prep.	\$75,000			5
Free Water per cy Dredged (10%)		gal		Ogden Beeman
Site Restoration	\$670,000	LS		_
Nearshore CDF				
Land Lease or Purchase	\$1.80	per sf		Ole
Length	15,520			Baird
Capping Volume	2,129,752	-		Baird
Area	19,167,772			Baird
Ground Treatment Volume	87,257	-		
Ground Treatment		per cy		
Dredge Volume	2,129,752			
Fill Purchase/Placement		per cy		D : 1
Sheetpile Area	1,862,396			Baird Grant
Sheetpile Cost Shot Rock Berm		per sf per lf		Baird
Rip Rap		per lf		Baird
Place Treated Material		per cy		Ballu
Clean Soil Cap		per cy		Baird
Seeding		per sy		Baird
Mitigation		per acre		
. 5		per year		Tim
Long-term Monitoring	\$650,000	per year		
Long-term O&M	2%	of capital		
CAD				
Removal Volume	16,328,102	cy		
Area	27,553,672			
Sand Cap Thickness		ft		
Mobilization/Site Prep Placement Rate	\$200,000			0-1 P
Sand Purchase		per cy per ton		Ogden Beeman Ole
Sand Density		tons per cy		Ole
Cap Placement QA	\$100,000			
Long-term O&M		of capital		
Long-term Monitoring	\$400,000	per year		
Water Treatment				
Flow Rate (7 dredges)	1,727			assume operate 24/7
Unit, Purchase	\$1,674,760			pj
Water Treatment (Including Operator)		per 1,000 gallons		pj
Water Treatment QA	\$200	per day		pj, 1 sample per day
Institutional Controls	6100.000			_:
Public Education Program	\$100,000			pj ~:
O&M Plans Deed Restrictions	\$20,000 \$5,000			pj pi
Annual Costs	\$5,000			pj
Public Education Program	\$30,000			ni
Maintaining O&M Plans	\$800			pj pj
Reporting	\$20,000			рj pj
Long-term Monitoring	\$600,000			Anne LTM
Long-term Monitoring (no action)	\$300,000			Anne LTM

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions	Quantity 1	Units LS		Cost \$5,000
Direct Capital: Engineering, Procureme	ent & Construction Managemer	nt:		\$5,000 600
Total Capital:				\$5,600
Present Worth of Longer Term Operatin Long-term Monitoring (no action)	ng Costs	Years 40	Annual Cost \$300,000	\$4,513,889
Total Present Worth, Lo	onger Term O&M Costs			\$4,513,889
Total Project Capital	and O&M Cost			\$4,500,000

ALTERNATIVE B: Monitored Natural Recovery

MONITORING/INSTITUTIONAL CONTROLS

Capital Items	Quantity	Units		Cost
Public Education Program	1	LS		\$100,000
O&M Plans	1	LS		\$20,000
Deed Restrictions	1	LS		\$5,000
Direct Capital:				\$125,000
Engineering, Procure	ement & Construction Managemen	nt:		15,000
Total Capital:				\$140,000
Present Worth of Longer Term Opera	ting Costs	Years	Annual Cost	
Long-term Monitoring	_	40	\$600,000	\$9,027,778
Public Education Program		40	\$30,000	\$451,389
Maintaining O&M Plans		40	\$800	\$12,037
Reporting		40	\$20,000	\$300,926
Total Present Worth,	Longer Term O&M Costs			\$9,792,130
Total Project Capit	al and O&M Cost			\$9,900,000

ALTERNATIVE D: Dredge Sediment to CDF

SEDIMENT REMOVAL (MECHANICAL DREDGING)

Capital Items	Quantity	Units		Cost
Mobilization - Equipment and Silt Curtain	7	LS		\$2,450,000
Watertight Barges	4	ea		\$400,000
Dredging - 12 hour shifts	4,083	Day	31.40769231	\$122,490,000
Dredge Monitoring (Water Quality)	4,083	Day		\$12,249,000
Sediment Removal QA	4,083	Day		\$4,899,600
Site Restoration	1	ea		\$670,000
Direct Capital:				\$143,158,600
Engineering, Procurement & Co	onstruction Manageme	nt:		17,179,032
Contractor Overhead/Profit:				21,473,790
Total Capital:				\$181,800,000

WATER TREATMENT

Capital Items	Quantity	Units	Cost
Unit Purchase	1,727	gpm	\$1,674,760
Water Treatment (Includes Operator)	2,029,749,525	gal	\$811,900
Water Treatment QA	817	day	\$163,400
Direct Capital:			\$2,650,060
Engineering, Procureme	nt & Construction Managemen	t:	318,007
Total Capital:			\$3,000,000

CDF CONSTRUCTION (Cellular Cofferdam Design)

Capital Items		Quantity	Units		Cost
Land Lease or Purchase		19,167,772	sf		\$34,501,989
Ground Treatment		87,257	cy		\$2,181,417
Dredging		2,028	day		\$11,561,513
Fill Purchase/Placement		2,129,752	cy		\$63,892,573
Shot Rock/Rip Rap		15,520	lf		\$13,424,770
Sheetpile Placement		1,862,396	sf		\$35,385,521
Clean Soil Cap		2,129,752	cy		\$21,297,524
Seeding		2,129,752	sy		\$2,129,752
Mitigation		440	acre		\$4,400,315
	Direct Capital:				\$188,775,376
	Engineering, Procurement & Construc	ction Manageme	nt:		\$22,653,045
	T-4-1 C				£311 439 431
	Total Capital:				\$211,428,421
Present Worth o	Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	10,000	\$150,463
Long-term Monitoring			40	650,000	\$9,780,093
Long-term O&M			40	4,228,568	\$63,624,296
	Total Present Worth, Longer Term Od	&M Costs			\$73,554,852
	Total Project Capital and O&M Co	ost			\$285,000,000

INSTITUTIONAL CONTROLS

Capital Items	Quantity	Units		Cost
Deed Restrictions	1	LS		\$5,000
Direct Capital:				\$5,000
Engineering, Pr	600			
Total Capital:		\$5,600		
Present Worth of Longer Term (Annual Cost			
Long-term Monitoring (no action)		40	\$300,000	\$4,513,889
Total Present V	Vorth, Longer Term O&M Costs			\$4,513,889
Total Project Capital and O&M Cost				\$4,500,000
TOTAL COST	ſ			\$474,300,000

ALTERNATIVE G: Dredge Sediment to CAD

SEDIMENT REMOVAL (MECHANICAL DREDGING)

Capital Items	Quantity	Units	Cost
Mobilization - Equipment and Silt Curtain	7	LS	\$2,450,000
Watertight Barges	4	ea	\$400,000
Dredging - 12 hour shifts	4,083	Day	\$122,490,000
Dredge Monitoring (Water Quality)	4,083	Day	\$12,249,000
Sediment Removal QA	4,083	Day	\$4,899,600
Site Restoration	1	ea	\$670,000
Direct Capital:			\$143,158,600
Engineering, Procurement &	Construction Manageme	nt:	17,179,032
Contractor Overhead/Profit:			21,473,790
Total Capital:			\$181,800,000

WATER TREATMENT

Capital Items	Quantity	Units	Cost
Unit Purchase	1,727	gpm	\$1,674,760
Water Treatment (Includes Operator)	2,029,749,525	gal	\$811,900
Water Treatment QA	817	day	\$163,400
Direct Capital:			\$2,650,060
Engineering, Procuremen	nt & Construction Managemen	t:	318,007
Total Capital:			\$3,000,000

CAD CONSTRUCTION

Capital Items Mobilization - Equipme	and and Cile Contain	Quantity	Units LS		Cost \$170,000
Dredging - 12 hour shif		15,551	Day		\$88,640,700
Sand Purchase	is	4,286,127			\$25,716,761
Placement		3,061,519	tons		\$18,369,115
Cap Placement QA		1	cy LS		\$100,000
Cap Flacement QA		1	LS		\$100,000
	Direct Capital:				\$132,996,575
	Engineering, Procurement & Construc	ction Manageme	nt:		15,959,589
	Total Capital:				\$148,956,164
Present Worth of Monitoring/O&M	of Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring			40	\$400,000	\$6,018,519
Long-term O&M			40	\$2,979,123	\$44,824,773
	Total Present Worth, Longer Term O&M Costs				\$50,843,292
	Total Project Capital and O&M Co	st			\$199,800,000
	IN	STITUTION	AL CONTR	OLS	
Capital Items		Quantity	Units		Cost
Deed Restrictions		1	LS		\$5,000
	Direct Capital: Engineering, Procurement & Construc	ction Manageme	nt:		\$5,000 600
	Total Capital:				\$5,600
Present Worth of Long-term Monitoring	of Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term Od	&M Costs			\$4,513,889
	Total Project Capital and O&M Co	st			\$4,500,000
	TOTAL COST				\$389,100,000

BASIS FOR PRELIMINARY COST ESTIMATES SEDIMENT REMEDIATION FOX RIVER, WISCONSIN

Zone 3A Action Level - 1,000 ppb

Material Handling Assumptions:					
Volume > 1,000 ppb	14,410	cv		11,000 m3	
Volume > 500 ppb	16,328,102			12,464,200 m3	
Volume > 5,000 ppb	0			0 m3	
Solids Specific Gravity	2.36	-			
Fresh Water Density	62.4	lb/ft3			
In Situ Density	28.5%	w/w	14.4% v/v	1.01 tons per cy	
Slurry Density (20% in situ)	6.5%	w/w	2.9% v/v	0.88 tons per cy	
Dewatered Density	28.5%	w/w	14.4% v/v	1.01 tons per cy	
Treated Density	93.4%	w/w	60.0% v/v	1.28 tons per cy	
Cost Estimating Parameters & Methodology:					
Interest Rate	6.0%				
Sales Tax	5.5%				Not Used
Engineering, Procurement and Construction Mgmt	12.0%				
Contractor Overhead and Profit - Dredging Only	15.0%				
Dredging					
Dredge Monitoring (Water Quality)	\$3,000	per day			
Sediment Removal QA	\$1,200	per day			
Mechanical - 12 cy bucket					
Dock Construction	\$400,000	LS			Ogden Beeman
Mobilization - Equipment	\$315,000	per dredge			Ogden Beeman
Mobilization - Silt Curtain	\$35,000				Ogden Beeman
Mobilization - Watertight Barge	\$100,000	ea			Ogden Beeman (JAG estimate)
Shift Rate (10 hours)	\$30,000	per shift			Ogden Beeman
Dredge Rate	4000	cy in situ p	er 10 hour shift		Ogden Beeman
Offload Stockpile Area Prep.	\$75,000	per area			
Free Water per cy Dredged (10%)	20	gal			Ogden Beeman
Site Restoration	\$670,000	LS			
Solidification					Tim
Percent Lime	10.0%	(w/w)			
Lime	\$60	per ton	Mixing	\$25 per ton	Ole
Water Treatment					
Flow Rate	286				assume operate 24/7
Unit, Purchase	\$569,927				pj
Water Treatment (Including Operator)	\$0.40	per 1,000 g	allons		рj
Water Treatment QA	\$200	per day			pj, 1 sample per day
<u>Disposal</u>					
Off-Site Disposal					
Load Soil for Hauling	\$2.80	ner ton			
Round-trip Hauling		hours			
Tipping Fee (non-TSCA)		per ton			
Tipping Fee (TSCA)		per ton			
Truck Rate		per hour			
Truck Load	32				
Institutional Controls	22	tons			
Public Education Program	\$100,000				pj
O&M Plans	\$20,000				pj
Deed Restrictions	\$5,000				pj
Annual Costs	\$5,000				r)
Public Education Program	\$30,000				pj
Maintaining O&M Plans	\$800				pj
Reporting	\$20,000				pj
Long-term Monitoring	\$600,000				Anne LTM
Long-term Monitoring (no action)	\$300,000				Anne LTM
	4500,000				
ALTERNATIVE A: No Action					

ALTERNATIVE A: No Action

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	rect Capital: gineering, Procurement & Construction	on Management:			\$5,000 600
Tot	Total Capital:				\$5,600
Present Worth of Longer Term Operating Costs Years Annual Cost Long-term Monitoring (no action) 40 \$300,000					\$4,513,889
Tot	tal Present Worth, Longer Term O&M	A Costs			\$4,513,889
Tot	tal Project Capital and O&M Cost				\$4,500,000

ALTERNATIVE B: Monitored Natural Recovery

MONITORING/INSTITUTIONAL CONTROLS

Capital Items Public Education Progra	ım	Quantity	Units LS		Cost \$100,000
O&M Plans		1	LS		\$20,000
Deed Restrictions		1	LS		\$5,000
	Direct Capital:				\$125,000
	Engineering, Procurement & Constr	uction Manageme	nt:		15,000
	Total Capital:				\$140,000
Present Worth o	f Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring			40	\$600,000	\$9,027,778
Public Education Progra	ım		40	\$30,000	\$451,389
Maintaining O&M Plan	S		40	\$800	\$12,037
Reporting			40	\$20,000	\$300,926
	Total Present Worth, Longer Term 0	O&M Costs			\$9,792,130
	Total Project Capital and O&M (Cost			\$9,900,000

ALTERNATIVE C: Dredge and Off-site Disposal

SEDIMENT REMOVAL (MECHANICAL DREDGING)

Capital Items	Quantity	Units	Cost
Mobilization - Equipment and Silt Curtain	7	LS	\$2,450,000
Watertight Barges	4	ea	\$400,000
Dredging - 12 hour shifts	4	Day	\$120,000
Dredge Monitoring (Water Quality)	4	Day	\$12,000
Sediment Removal QA	4	Day	\$4,800
Site Restoration	1	ea	\$670,000
Direct Capital:			\$3,656,800
Engineering, Procurement & C	Construction Manageme	nt:	438,816
Contractor Overhead/Profit:	548,520		
Total Capital:			\$4,600,000

WATER TREATMENT

Capital Items	Quantity	Units	Cost
Unit Purchase	286	gpm	\$569,927
Water Treatment (Includes Operator)	297,131	gal	\$119
Water Treatment QA	1	day	\$200
Direct Capital:			\$570,246
Engineering, Procurem	68,429		
			•
Total Capital:			\$600,000

SEDIMENT DISPOSAL (OFF-SITE)

Capital Items	Quantity	Units	Cost
Solidification	14,494	ton	\$362,350
Lime Purchase	1,450	ton	\$87,000
Soil Loading	14,494	ton	\$40,583
Soil Hauling	14,494	ton	\$67,941
Tipping Fees (non-TSCA)	14,494	ton	\$623,239
Direct Capital:			\$1,181,113
Engineering, Procurement & Construction Management:			141,734
Total Capital:			\$1,300,000

INSTITUTIONAL CONTROLS

Capital Items		Quantity	Units		Cost
Deed Restrictions		1	LS		\$5,000
	Direct Capital:				\$5,000
	Engineering, Procurement & Construc	tion Managamar	nt.		600
	C C.	tion managemen	IL.		
	Total Capital:				\$5,600
Present Worth	Annual Cost				
Long-term Monitoring			Years 40	\$300.000	\$4,513,889
Long term wontering	(no action)		-10	\$500,000	\$1,515,009
	Total Present Worth, Longer Term O&	kM Costs			\$4,513,889
	, . 8				- ,,
Total Project Capital and O&M Cost					\$4,500,000
	TOTAL COST				\$11,000,000
					\$11,000,000

Table 7-3 Cost Summary for Remedial Alternatives - Zone 3E 500 ppb

Alternative	Dredge Volume (cy)	Hydraulic Dredging	Mechanical Dredging	Dewatering	Water Treatment	CAD Construction	CDF Construction	Off-site Disposal	Institutional Controls	Subtotal	20% Contingency	TOTAL
Α	0								\$4,500,000	\$4,500,000	\$900,000	\$5,400,000
В	0								\$9,900,000	\$9,900,000	\$1,980,000	\$11,880,000
D	43,625,096		\$478,200,000		\$4,700,000		\$667,700,000		\$4,500,000	\$1,155,100,000	\$231,020,000	\$1,386,120,000
G	43,625,096		\$478,600,000		\$4,700,000	\$523,100,000			\$4,500,000	\$1,010,900,000	\$202,180,000	\$1,213,080,000

BASIS FOR PRELIMINARY COST ESTIMATES

SEDIMENT REMEDIATION FOX RIVER, WISCONSIN

Zone 3B

Action Level - 500 ppb

Material Handling Assumptions:				
Volume > 500 ppb	43,625,096	cy	33,301,600 m3	
Volume > 1,000 ppb		cy	0 m3	
Volume > 5,000 ppb		cy	0 m3	
Solids Specific Gravity Fresh Water Density	2.36	lb/ft3		
In Situ Density	28.4%		1.01 tons per cy	
Slurry Density (20% in situ)		6 w/w 2.9% v/v	0.88 tons per cy	
Dewatered Density	50.0%		1.18 tons per cy	
Treated Density	93.4%		1.28 tons per cy	
CDF Capacity	26,500,893	cy	22,394,400 m3	
CAD Capacity	29,336,664	cy	22,394,400 m3	
Cost Estimating Parameters & Methodology:				
Interest Rate	6.0%			
Sales Tax	5.5%			Not Used
Engineering, Procurement and Construction Mgmt Contractor Overhead and Profit - Dredging Only	12.0% 15.0%			
Dredging	13.070	5		
Dredge Monitoring (Water Quality)	\$3.000	per day		
Sediment Removal QA		per day		
Mechanical - 7 dredges				
Dock Construction	\$400,000			Ogden Beeman
Mobilization - Equipment		per dredge		Ogden Beeman
Mobilization - Silt Curtain	\$35,000			Ogden Beeman
Mobilization - Watertight Barge	\$100,000			Ogden Beeman (JAG estimate)
Shift Rate (10 hours)		per shift		Ogden Beeman
Dredge Rate Offload Stockpile Area Prep.		cy in situ per 10 hour shift per area		Ogden Beeman
Free Water per cy Dredged (10%)		gal		Ogden Beeman
Site Restoration	\$670,000			ogaen Beeman
Nearshore CDF	,			
Land Lease or Purchase	\$1.80	per sf		Ole
Length	25,368	lf		Baird
Capping Volume	5,690,230			Baird
Area	51,212,069	The state of the s		Baird
Ground Treatment Volume Ground Treatment	142,626			
Dredge Volume	5,690,230	per cy		
Fill Purchase/Placement		per cy		
Sheetpile Area	3,044,194			Baird
Sheetpile Cost		per sf		Grant
Shot Rock Berm	\$650	per lf		Baird
Rip Rap		per lf		Baird
Place Treated Material		per cy		
Clean Soil Cap		per cy		Baird
Seeding		per sy		Baird
Mitigation		per acre per year		Tim
Long-term Monitoring	\$650,000			11111
Long-term O&M		of capital		
CAD				
Removal Volume	43,625,096	cy		
Area	73,617,350			
Sand Cap Thickness		ft		
Mobilization/Site Prep Placement Rate	\$200,000	per cy		Ogden Beeman
Sand Purchase		per ton		Ole
Sand Density		tons per cy		
Cap Placement QA	\$100,000			
Long-term O&M		of capital		
Long-term Monitoring	\$400,000	per year		
Water Treatment Flow Rate (7 dredges)	1 720	ann.		assume operate 24/7
Unit, Purchase	1,729 \$1,676,421			pj
Water Treatment (Including Operator)		per 1,000 gallons		pj pj
Water Treatment (Merading Operator)		per day		pj, 1 sample per day
Institutional Controls				1 1 79
Public Education Program	\$100,000			pj
O&M Plans	\$20,000			pj
Deed Restrictions	\$5,000			pj
Annual Costs	000.000			
Public Education Program Maintaining O&M Plans	\$30,000			pj ni
Maintaining O&M Plans Reporting	\$800 \$20,000			pj pj
Long-term Monitoring	\$600,000			Anne LTM
Long-term Monitoring (no action)	\$300,000			Anne LTM
	•			

INSTITUTIONAL CONTROLS

Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000	
	Direct Capital: Engineering, Procurement & Constru	ction Management	:		\$5,000 600	
	Total Capital:					
Present Worth of Longer Term Operating Costs Years Annual Cost Long-term Monitoring (no action) 40 \$300,000					\$4,513,889	
Total Present Worth, Longer Term O&M Costs					\$4,513,889	
	Total Project Capital and O&M Co	ost			\$4,500,000	

ALTERNATIVE B: Monitored Natural Recovery

MONITORING/INSTITUTIONAL CONTROLS

Capital Items	Quantity	Units		Cost
Public Education Program	1	LS		\$100,000
O&M Plans	1	LS		\$20,000
Deed Restrictions	1	LS		\$5,000
Direct Capital:				\$125,000
Engineering, Procurement & Co	onstruction Manageme	nt:		15,000
Total Capital:				\$140,000
Present Worth of Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring		40	\$600,000	\$9,027,778
Public Education Program		40	\$30,000	\$451,389
Maintaining O&M Plans		40	\$800	\$12,037
Reporting		40	\$20,000	\$300,926
Total Present Worth, Longer Te	erm O&M Costs			\$9,792,130
Total Project Capital and O&	M Cost			\$9,900,000

ALTERNATIVE D: Dredge Sediment to CDF

SEDIMENT REMOVAL (MECHANICAL DREDGING)

Capital Items	Quantity	Units		Cost
Mobilization - Equipment and Silt Curtain	7	LS		\$2,450,000
Watertight Barges	4	ea		\$400,000
Dredging - 12 hour shifts	10,907	Day	83.9	\$327,210,000
Dredge Monitoring (Water Quality)	10,907	Day		\$32,721,000
Sediment Removal QA	10,907	Day		\$13,088,400
Site Restoration	1	ea		\$670,000
Direct Capital:				\$376,539,400
Engineering, Procurement & Co	nstruction Manageme	nt:		45,184,728
Contractor Overhead/Profit:				56,480,910
Total Capital:				\$478,200,000

WATER TREATMENT

Capital Items	Quantity	Units	Cost	
Unit, Purchase	1,729	LS	\$1,676,421	
Water Treatment (Includes Operator)	5,432,013,966	gal	\$2,172,806	
Water Treatment QA	1,909	day	\$381,800	
Direct Capital:			\$4,231,027	
Engineering, Procureme	Engineering, Procurement & Construction Management:			
Total Capital:			\$4,700,000	

CDF CONSTRUCTION (Cellular Cofferdam Design)

Capital Items		Quantity	Units		Cost
Land Lease or Purchase		51,212,069	sf		\$92,181,725
Ground Treatment		142,626	cy		\$3,565,653
Dredging		5,419	day		\$30,889,820
Fill Purchase/Placemen	t	5,690,230	cy		\$170,706,897
Shot Rock/Rip Rap		25,368	lf		\$21,943,566
Sheetpile Placement		3,044,194	sf		\$57,839,688
Clean Soil Cap		5,690,230	cy		\$56,902,299
Seeding		5,690,230	sy		\$5,690,230
Mitigation		1,176	acre		\$11,756,673
	Direct Capital:				\$451,476,551
	Engineering, Procurement & Constr	uction Manageme	nt:		\$54,177,186
	Total Capital:				\$505,653,737
Present Worth o	f Longer Term Operating Costs		Years	Annual Cost	
Mitigation			40	10,000	\$150,463
Long-term Monitoring			40	650,000	\$9,780,093
Long-term O&M			40	10,113,075	\$152,164,325
· ·					
	Total Present Worth, Longer Term C	O&M Costs			\$162,094,881
	Total Project Capital and O&M C	Cost			\$667,700,000

INSTITUTIONAL CONTROLS

Capital Items		Quantity	Units		Cost
Deed Restrictions		1	LS		\$5,000
	Direct Capital:				\$5,000
		600			
	Total Capital:				\$5,600
Present Worth of I	Annual Cost				
Long-term Monitoring (no	o action)		40	\$300,000	\$4,513,889
Total Present Worth, Longer Term O&M Costs					\$4,513,889
Total Project Capital and O&M Cost					\$4,500,000
	TOTAL COST				\$1,155,100,000

ALTERNATIVE G: Dredge Sediment to CAD

SEDIMENT REMOVAL (MECHANICAL DREDGING)

Capital Items	Quantity	Units	Cost
Mobilization - Equipment and Silt Curtain	8	LS	\$2,800,000
Watertight Barges	4	ea	\$400,000
Dredging - 12 hour shifts	10,907	Day	\$327,210,000
Dredge Monitoring (Water Quality)	10,907	Day	\$32,721,000
Sediment Removal QA	10,907	Day	\$13,088,400
Site Restoration	1	ea	\$670,000
Direct Capital:			\$376,889,400
Engineering, Procurement & Cor	45,226,728		
Contractor Overhead/Profit:			56,533,410
Total Capital:			\$478,600,000

WATER TREATMENT

Capital Items	Quantity	Units	Cost
820 gpm unit, Purchase	1	LS	\$1,676,421
Water Treatment (Includes Operator)	5,432,013,966	gal	\$2,172,806
Water Treatment QA	1,909	day	\$381,800
Direct Capital:			\$4,231,027
Engineering, Procurement & Construction Management:			507,723
Total Capital:			\$4,700,000

12/15/2002

CAD CONSTRUCTION

Capital Items Mobilization - Equipme Dredging - 12 hour shif Sand Purchase Placement Cap Placement QA	ent and Silt Curtain ts	Quantity 1 41,548 11,451,588 8,179,706 1	Units LS Day tons cy LS		Cost \$170,000 \$236,823,600 \$68,709,526 \$49,078,233 \$100,000
	Direct Capital: Engineering, Procurement & Constr	uction Manageme	nt:		\$354,881,359 42,585,763
	Total Capital:				\$397,467,122
Present Worth o	f Longer Term Operating Costs		Years	Annual Cost	
Long-term Monitoring Long-term O&M			40 40	\$400,000 \$7,949,342	\$6,018,519 \$119,608,166
	Total Present Worth, Longer Term C	O&M Costs			\$125,626,685
		\$523,100,000			
	Γ	NSTITUTION	NAL CONTR	COLS	
Capital Items Deed Restrictions		Quantity 1	Units LS		Cost \$5,000
	Direct Capital: Engineering, Procurement & Constr	uction Manageme	nt:		\$5,000 600
	Total Capital:				\$5,600
Present Worth o Long-term Monitoring (f Longer Term Operating Costs (no action)		Years 40	Annual Cost \$300,000	\$4,513,889
	Total Present Worth, Longer Term (O&M Costs			\$4,513,889
	Total Project Capital and O&M C	Cost			\$4,500,000
	TOTAL COST				\$1,010,900,000

Table 7-3 Cost Summary for Remedial Alternatives - Zone 4 500 ppb

Alternative	Dredge Volume (cy)	Hydraulic Dredging	Mechanical Dredging	Dewatering	Water Treatment	CAD Construction	CDF Construction	Off-site Disposal	Institutional Controls	Subtotal	20% Contingency	TOTAL
Α	0								\$4,500,000	\$4,500,000	\$900,000	\$5,400,000
В	0								\$9,900,000	\$9,900,000	\$1,980,000	\$11,880,000